



AGENDA
May 24, 2022
Council Conference Meeting
7:00 p.m.

APPOINTMENTS

PRESENTATION

BIDS

RESOLUTIONS

Finance Policy Committee

1. Resolution authorizing the Chief Financial Officer to draw a check for the balance of escrow monies (tree bond)
2. Resolution authorizing the Chief Financial Officer to draw a check for the balance of escrow monies (planning board)
3. Resolution authorizing the Chief Financial Officer to refund Recreation Department Fees
4. Resolution authorizing the Chief Financial Officer to draw warrants for overpaid taxes in 2021-2022
5. Resolution authorizing the Chief Financial Officer to refund dumpster security payment
6. Resolution authorizing a lease agreement with Enterprise for police vehicles
7. Resolution requesting permission for the Dedication by Rider for donations (Sustainability Initiatives)
8. Resolution authorizing the Town of Westfield to enter a Cooperative Pricing Agreement
9. Resolution authorizing an award of contract for council chambers upgrades (AV closet)
10. Resolution authorizing an award of contract for council chambers upgrades (flooring)

Public Safety, Transportation and Parking Committee

1. Resolution authorizing an award of contract for solar-powered speed displays

Code Review & Town Property Committee

1. Resolution to approve Children's Amusement Device License
2. Resolution to approve Peddler's License
3. Resolution approving a redevelopment agreement with Ferris Prospect Development LLC concerning the redevelopment of block 2504, lots 12, 13 and 14

Public Works Committee

ORDINANCES

GENERAL BUSINESS

Event Request: Chamber of Commerce

COMMITTEE REPORTS

OPEN DISCUSSION BY CITIZENS

EXECUTIVE SESSION



**TOWN OF WESTFIELD
TOWN COUNCIL
REGULAR MEETING**

**Tuesday, May 24, 2022
8:00 PM**

PROPOSED AGENDA

This agenda is prepared for the information of the public. It is the order of the meeting; however, if changes in order, deletions or additions are made, they will be noted at the time.

1. Roll Call
2. Invocation
3. Salute to the flag
4. Appointments

Memorial Library Board

Colleen Cusick to fill unexpired term ending December 31, 2025

5. Presentations

Proclamations

Guillotine Salon & Spa
Mental Health Council

6. Advertised Hearings
7. Approval of Minutes from Town Council Conference Session held May 10, 2022
Approval of Minutes from Town Council Regular Meeting held May 10, 2022
8. Petitions and Communications
9. Open discussion by citizens
10. Bills and Claims in the amount of \$352,378.08
11. Reports of Standing Committees

Finance Policy Committee

1. Resolution authorizing the Chief Financial Officer to draw a check for the balance of escrow monies (tree bond)
2. Resolution authorizing the Chief Financial Officer to draw a check for the balance of escrow monies (planning board)
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Public Safety, Transportation and Parking Committee

1. Resolution authorizing an award of contract for solar-powered speed displays

Code Review & Town Property Committee

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Public Works Committee

12. Reports of Department Heads

TOWN OF WESTFIELD
WESTFIELD NEW JERSEY
RESOLUTION NO. XX-2022

FINANCE POLICY COMMITTEE

MAY 24, 2022

WHEREAS Robert A. Panza, Owner of real property located at 570 Westfield Ave, Westfield, NJ, posted an escrow in the amount of \$2,500 with the Town to guarantee the installation of landscaping as required by the Tree Preservation Committee's approval of Tree Permit #18-023, and as a condition of CO approval, and

WHEREAS the Owner has completed the necessary landscaping installation and has requested that this amount be returned, and

WHEREAS the Director of the Department of Public Works has inspected the property and has found the work to be in compliance with the provisions of the requirements.

NOW, THEREFORE BE IT RESOLVED that the Chief Financial Officer be and is hereby authorized to issue a warrant in the name of Robert A. Panza for the release of previously held escrow monies, in the total amount of \$2,500.00 and forward same to:

Robert A. Panza
100 Winchester Way
Westfield, NJ 07090.

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY
RESOLUTION NO.

FINANCE POLICY COMMITTEE

MAY 24, 2022

WHEREAS, the following applicant has posted monies to be held in escrow to cover expert advice and testimony in connection with Board of Adjustment and Planning Board applications on said property; and

WHEREAS, expert advice and testimony was given, and

WHEREAS, all bills for these applications have been submitted and paid; and

NOW, THEREFORE, BE IT RESOLVED, that the Chief Financial Officer is authorized to draw a check for the balance of the escrow monies as follows:

<i>App #</i>	<i>Name</i>	<i>Address</i>	<i>G/L</i>	<i>Refund Balance</i>
<i>PB 18-10</i>	Stuart Schnitzer	885 New England Drive	2-05-550-307	\$226.50
<i>Return to:</i>	Stuart Schnitzer	885 New England Drive	Westfield NJ	07090

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY
RESOLUTION NO.

FINANCE POLICY COMMITTEE

MAY 24, 2022

RESOLVED, that the Town Treasurer be authorized to refund the following fees to the following individual via checks:

<u>Name</u>	<u>Account</u>	<u>Class</u>	<u>Fee</u>
Jessica Weitzman 639 Salter Place Westfield, NJ 07090	Pool Membership 03-55-920-202	Refund Pool Membership / Summer 2022 Peter Weitzman / Resident Family of 4 or less	\$418.00
Tom Hendrickson 348 Willow Ave Apt #1 Garwood, NJ 07027	Tennis/Rec T-05-600-071	Refund Adult Tennis / Spring Session 2 Tom Hendrickson / Lo Int/Int - Thu 6:45 pm	\$147.00
Lori Melnitsky 15 Swan Mill Lane Scotch Plains, NJ 07076	Tennis/Rec T-05-600-071	Refund Adult Pickleball / Spring 2022 Lori Melnitsky / Intermediate Session 2	\$85.00
Diane Camera 34 Chetwood Terr Fanwood, NJ 07023	Tennis/Rec T-05-600-071	Refund Adult Pickleball / Spring 2022 Diane Camera / "Almost" Session 2 (\$85.00) Diane Camera / Intermediate Session 2 (\$85.00)	\$170.00
Violetta Watson 511 Edgar Road Westfield, NJ 07090	Tennis/Rec T-05-600-071	Refund Mannerations / Dinning Etiquette Martin Watson / Social Dining (\$50) Ryan Watson / Social Dining (\$50)	\$100.00
Melissa Mahon 259 Hazel Ave Westfield, NJ 07090	Tennis/Rec T-05-600-071	Refund Playground Camp / Summer 2022 Theo Mohan / McKinley	\$346.75
Nina Raoji 728 Tamaques Way Westfield, NJ 07090	Tennis/Rec T-05-600-071	Refund Adult Tennis / Spring Session 2 Nina Raoji / Beg/Adv Beg – Thu 9:30 am	\$139.65
Susan Frigand 17 Sandra Circle Westfield, NJ 07090	Tennis/Rec T-05-600-071	Refund Adult Pickleball / Spring / Session 2 Allen Dubinsky / PM Intermediate Class	\$10.00

BE IT FURTHER RESOLVED, that the Town Treasurer be authorized to refund the following fees to the following individual via credit card:

<u>Name</u>	<u>Account</u>	<u>Class</u>	<u>Fee</u>
Tom Hendrickson 348 Willow Ave #1	Tennis/Rec T-05-600-071	Refund Adult Pickleball / Spring Session 2 Tom Hendrickson / "Almost" Intermediate	\$90.00

Garwood, NJ 07027

Achilles Alon
335 Wychwood Rd
Westfield, NJ 07090

Tennis/Red
T-05-600-071

Refund \$398.00
Volleyball / Summer Clinics 2022
Dhanya Alon / Session #1 6-8 grade (\$199)
Dhanya Alon / Session #2 6-8 grade (\$199)

Amy Casiere
550 Sherwood Pkwy
Westfield, NJ 07090

Tennis/Rec
T-05-600-071

Refund \$121.00
Youth Tennis / Spring 2022 / Session 2
Joseph Casiere / Level 2 / Tue 4:15 pm

Vikram Venkataraman
123 Wells St
Westfield, NJ 07090

Swim Lessons/Pool
03-55-920-203

Refund \$74.00
Swim Lessons / Session 1
Zakai Venkataraman / Fearful Beg 10:30 am

John Kim
417 Tuttle Parkway
Westfield, NJ 07090

Tennis/Rec
T-05-600-071

Refund \$142.50
Ultimate Frisbee /Summer 2022
Judah Kim / Session 1 (7/11-14)

Richard Heller
1 Far Hill Rd
Springfield, NJ 07081

Pool Membership
03-55-920-202

Refund \$365.75
Pool Membership / Summer 2022
Non-Resident Individual Membership

William Doll
21 Azalea Trail
Westfield, NJ 07090

Tennis/Rec
T-05-600-071

Refund \$96.80
Youth Tennis / Spring 2022 / Session 2
Jack Doll / Level 1 – Tue 5:30 pm

TOWN OF WESTFIELD
WESTFIELD NEW JERSEY

RESOLUTION NO.

FINANCE POLICY COMMITTEE

MAY 24, 2022

RESOLVED that the Chief Financial Officer be, and he hereby is authorized to draw warrants to the following persons, these amounts being overpaid for 2022:

Block/Lot/Qualifier		Quarter/Year
Name	Property Address	Amount
405/11	331 Orenda Circle	1 st /2022
LEVIN, Michael		\$2,464.33
		2 nd /2022
		<u>\$4,166.88</u>
		<u>\$6,631.21</u>

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY
RESOLUTION NO.

FINANCE POLICY COMMITTEE

MAY 24, 2022

LET IT HEREBY BE RESOLVED that the Chief Financial Officer be and hereby is authorized to draw a warrant for refund of dumpster security payment(s) as follows following final inspection and approval for return of deposit:

Jeff Kirshenbaum
533 Birch Avenue
Westfield, NJ 07090

Amount of refund: \$975.00

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY
RESOLUTION NO. X-2022

FINANCE POLICY COMMITTEE

MAY 24, 2022

WHEREAS, the Town of Westfield has entered into a multi-year lease agreement with Enterprise FM Trust, 1550 Route 23 North, Wayne, NJ 07470 for the lease of vehicles for use by the Police Department, and

WHEREAS, this is the second year of the five-year 2021 lease program and the third year of the 2020 lease program, and it is necessary to provide for the 2022 funding of the lease payments

NOW, THEREFORE, BE IT RESOLVED, that the Town of Westfield authorizes the second year of a five-year lease agreement and that the Chief Financial Officer is hereby authorized to prepare warrants for payment in an amount not expected to exceed \$87,600.00, to be charged to the Police Vehicles account 2-01-130-251, under Purchase Order No. 22-00057.

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY
RESOLUTION NO.

FINANCE POLICY COMMITTEE

MAY 24, 2022

RESOLUTION REQUESTING PERMISSION FOR THE DEDICATION
BY RIDER FOR DONATIONS – ACCEPTANCE OF BEQUESTS AND GIFTS
REQUIRED BY N.J.S.A. 40A:5-29

WHEREAS, permission is required of the Director of the Division of Local Government Services for approval as a dedication by rider of revenues received by a municipality when the revenue is not subject to reasonably accurate estimates in advance, and

WHEREAS, N.J.S.A 40A:5-29 provides for receipt of Donations – Acceptance of Bequests and Gifts for Sustainability Initiatives by the municipality to provide for the operating costs to administer this act, and

WHEREAS, N.J.S.A. 40A:4-39 provides the dedicated revenues anticipated from Donations – Acceptance of Bequests and Gifts for Sustainability Initiatives are hereby anticipated as revenue and are hereby appropriated for the purpose to which said revenue is dedicated by statute or other legal requirement.

NOW, THEREFORE, BE IT RESOLVED, by the Council of the Town of Westfield, County of Union, New Jersey, as follows:

1. The Governing Body does hereby request permission of the Director of the Division of Local Government Services to pay expenditures for Donations – Acceptance of Bequests and Gifts for Sustainability Initiatives, as authorized under N.J.S.A. 40A:5-9.
2. The Clerk of the Town of Westfield, County of Union is hereby directed to forward two certified copies of this Resolution to the Director of the Division of Local Government Services.

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY
RESOLUTION NO.

FINANCE POLICY COMMITTEE

MAY 24, 2022

A RESOLUTION AUTHORIZING THE TOWN OF WESTFIELD
TO ENTER INTO A COOPERATIVE PRICING AGREEMENT

WHEREAS, N.J.S.A. 40A:11-11(5) authorizes contracting units to establish a Cooperative Pricing System and to enter into Cooperative Pricing Agreements for its administration; and

WHEREAS, the Hunterdon County Educational Services Commission, hereinafter referred to as the "Lead Agency " has offered voluntary participation in a Cooperative Pricing System for the purchase of goods and services;

WHEREAS, on May 24, 2022 the governing body of the Town of Westfield, County of Union, State of New Jersey duly considered participation in a Cooperative Pricing System for the provision and performance of goods and services;

NOW, THEREFORE BE IT RESOLVED as follows:

This RESOLUTION shall be known and may be cited as the Cooperative Pricing Resolution of the Town of Westfield, and

Pursuant to the provisions of *N.J.S.A. 40A:11-11(5)*, the Town Administrator and Chief Financial Officer are hereby authorized to enter into a Cooperative Pricing Agreement with the Lead Agency.

The Lead Agency shall be responsible for complying with the provisions of the *Local Public Contracts Law (N.J.S.A. 40A:11-1 et seq.)* and all other provisions of the revised statutes of the State of New Jersey. This resolution shall take effect immediately upon passage.

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY
RESOLUTION NO. -2022

FINANCE POLICY COMMITTEE

MAY 24, 2022

WHEREAS, a need exists for improvements to the Town Council Chambers and other meeting rooms within the Westfield Municipal Building, and

WHEREAS, at a meeting held October 13, 2020, the Town Council of the Town of Westfield authorized an award of contract to Fraytak Veisz Hopkins Duthie P.C. (FVHD), Architects and Planners, for various design and architectural services for the Town's AV Broadcast Video System in Town Council Chambers; and

WHEREAS, through the design and architectural services provided, FVHD has recommended that the Town of Westfield authorize a contract to Northeastern Interior Services, LLC for the installation of and costs associated with a new closet needed for Town Council Chambers; and

WHEREAS, the contract for these improvements was awarded through a Cooperative Purchasing Agreement with the Hunterdon County Educational Services Commission (HCESC), and

WHEREAS, the Town Treasurer certified to the availability of adequate funds for payment of the above referenced alternate items, prepared in accordance with N.J.A.C. 5:30 1.10, which will be in the amount of \$18,407.00, under New Jersey State Approved Co-Op Contract # HCESC-SER-20F, charged to Special Ordinance 2221, C-07-21-222-1F1, under Purchase Order No 22-01721.

NOW, THEREFORE BE IT RESOLVED that the Mayor and Town Council of the Town of Westfield be and hereby authorize an amendment to the contract awarded for services described above to Northeastern Interior Services LLC, 5 Fairfield Avenue, Little Falls, NJ 07424 in an amount not expected to exceed \$18,407, under New Jersey State Approved Co-Op Contract No. HCESC-SER-20-F.

BE IT FURTHER RESOLVED that the proper Town Officials be, and they are hereby authorized to take whatever actions are appropriate in the execution and discharge of this Contract.

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY
RESOLUTION NO. -2022

FINANCE POLICY COMMITTEE

MAY 24, 2022

WHEREAS, a need exists for improvements to the Town Council Chambers and other meeting rooms within the Westfield Municipal Building, and

WHEREAS, at a meeting held October 13, 2020, the Town Council of the Town of Westfield authorized an award of contract to Fraytak Veisz Hopkins Duthie P.C. (FVHD), Architects and Planners, for various design and architectural services for the Town's AV Broadcast Video System in Town Council Chambers; and

WHEREAS, through the design and architectural services provided, FVHD has recommended that the Town of Westfield authorize a contract to The Gillespie Group, Inc. for the furnishing and installation of flooring needed for Town Council Chambers; and

WHEREAS, the contract for these improvements was awarded through a Cooperative Purchasing Agreement with the Educational Services Commission of NJ (ESCNJ), and

WHEREAS, the Town Treasurer certified to the availability of adequate funds for payment of the above referenced alternate items, prepared in accordance with N.J.A.C. 5:30 1.10, which will be in the amount of \$19,853.28, under New Jersey State Approved Co-Op Contract ESCNJ #19/20-05, charged to Special Ordinance 2221, C-07-21-222-1F1, under Purchase Order No 22-01722.

NOW, THEREFORE BE IT RESOLVED that the Mayor and Town Council of the Town of Westfield be and hereby authorize an amendment to the contract awarded for services described above to The Gillespie Group in an amount not expected to exceed \$19,853.28, under New Jersey State Approved Co-Op Contract ESCNJ #19/20-05.

BE IT FURTHER RESOLVED that the proper Town Officials be, and they are hereby authorized to take whatever actions are appropriate in the execution and discharge of this Contract.

TOWN OF WESTFIELD
WESTFIELD NEW JERSEY

RESOLUTION NO. -2022

PUBLIC SAFETY, TRANSPORTATION & PARKING COMMITTEE

MAY 24, 2022

WHEREAS, the Town of Westfield Police Department has determined that a need exists for the purchase of solar-powered speed displays; and

WHEREAS, All Traffic Solutions, 14201 Sullyfield Circle, Suite 300, Chantilly, VA 20151 currently has NJ State Contract 17-FLEET-00776 and would provide the above referenced products at a fee not to exceed \$41,468.40; and

WHEREAS, a Certificate of the Chief Financial Officer, certifying the availability of adequate funds for this contract, prepared in accordance with NJAC 5:30-1.10, has been furnished to the Town Clerk. Expenditure of funds pursuant to this contract is to be charged to Special Ordinance 2022-1, account #C-07-22-001-1C3 under Purchase Order #22-01648.

NOW, THEREFORE, BE IT RESOLVED, that the Town of Westfield be and hereby authorizes an award a contract to All Traffic Solutions of solar-powered speed displays at a fee not to exceed \$41,468.40; and

BE IT FURTHER RESOLVED that the proper Town Officials be authorized to effect whatever actions are necessary in the execution and discharge of this contract.

TOWN OF WESTFIELD
WESTFIELD NEW JERSEY

RESOLUTION NO.

CODE REVIEW & TOWN PROPERTY COMMITTEE

MAY 24, 2022

RESOLVED that the following application for children's amusement devices be approved:

Amazing Amusements
238 Boundary Road
Marlboro, NJ 07746

Wilson School Carnival
June 3, 2022
301 Linden Avenue
Westfield, NJ 07090

Lindsay Hall
301 Linden Avenue
Westfield, NJ 07090

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY

RESOLUTION NO.

CODE REVIEW & TOWN PROPERTY COMMITTEE

MAY 24, 2022

RESOLVED that the following applications for Peddlers License be and the same are hereby approved:

Danny Vasiliadis	Mohammed Awawda
Danny's Soft Serve	Good Humor
1081 E. Grant Street	700 Probst Avenue
Elizabeth, NJ 07201	Fairview, NJ 07022
Albert Ogunmoye	Jason Black
Good Humor	Scream Truck
17 Orchard Place	30 Hillside Avenue
Irvington, NJ 07111	Springfield, NJ 07081

BE IT FURTHER RESOLVED that the licenses shall not be issued by the Town Clerk unless the departmental inspections of the premises have been completed and the premises approved for the licensed use.

TOWN OF WESTFIELD
WESTFIELD, NEW JERSEY

RESOLUTION NO. -2022

CODE REVIEW & TOWN PROPERTY COMMITTEE

MAY 24, 2022

**RESOLUTION OF THE TOWN OF WESTFIELD APPROVING A REDEVELOPMENT
AGREEMENT WITH FERRIS PROSPECT DEVELOPMENT LLC CONCERNING
THE REDEVELOPMENT OF BLOCK 2504, LOTS 12, 13 AND 14**

WHEREAS, the Local Redevelopment and Housing Law, *N.J.S.A. 40A:12A-1*, et seq., as amended and supplemented (the “**Redevelopment Law**”), provides a process for municipalities to participate in the redevelopment and improvement of areas designated by the municipality as being in need of redevelopment; and

WHEREAS, pursuant to the Redevelopment Law, on October 13, 2020, the Mayor and Council (the “**Governing Body**”) of the Town of Westfield (the “**Town**”) adopted Resolution Number 225-2020, declaring that the entirety of the Town met the statutory criteria for designation as an area in need of rehabilitation and designating all parcels within the Town as an area in need of rehabilitation (the “**Rehabilitation Area**”); and

WHEREAS, included within the Rehabilitation Area are Block 2504, Lots 12, 13, and 14, as shown on the official tax maps of the Town, known commonly as 201 Prospect Street (Lots 12 and 13) and 112 Ferris Place (Lot 14) (collectively, the “**Project Area**”); and

WHEREAS, an 18th century historic home known as the “Mills-Ferris-Pearsall House” is currently situated upon 112 Ferris Place (Block 2504, Lot 14) (the “**Historic Home**”); and

WHEREAS, following recommendation from the Town’s Historic Preservation Commission, the Governing Body adopted General Ordinance No. 2208-08 on February 22, 2022, designating the Historic Home as an historic landmark; and

WHEREAS, the Town retained the professional planning services of Topology which has prepared a redevelopment plan for the Project Area dated November 17, 2021, entitled the “Prospect + Ferris Redevelopment Plan,” a copy of which is on file with the Town Clerk (the “**Redevelopment Plan**”); and

WHEREAS, on December 7, 2021, following a review of consistency by the Town’s Planning Board (the “**Planning Board**”), the Governing Body adopted General Ordinance No. 2231 approving and adopting the Redevelopment Plan for the Project Area; and

WHEREAS, Ferris Prospect Development LLC (“**FPD**”) is the owner of the properties comprising the Project Area; and

WHEREAS, FPD proposes to remediate, develop, finance, construct, implement, and cohesively redevelop the Project Area into a mixed-use residential development consisting of a maximum 60 rental residential dwelling units (of which no less than 15% must be deed restricted as affordable housing units), 500 square feet of retail or cafe space, with 96 off-street parking spaces and associated improvements and preservation of the Historic Home for future use as an educational and cultural amenity (the “**Project**”); and

WHEREAS, FPD proposes to complete the Project in accordance with the conceptual architectural floor plans, elevations and renderings entitled “The Sophia – Westfield” prepared by Marchetto Higgins Stieve, dated

March 1, 2022, revised through May 13, 2022, the “Specific Parameters for Streetscape Improvements” (as referenced in the Redevelopment Plan) entitled “Streetscape Rendering Exhibit” prepared by Stonefield Engineering & Design, dated May 13, 2022, and survey prepared by EKA Associates, P.A., dated September 15, 2021 (collectively, the “**Concept Plans**”); and

WHEREAS, the Town has determined that FPD possesses the proper qualifications and experience to implement and complete the Project in accordance with the Redevelopment Plan, and all other applicable laws, ordinances and regulations; and

WHEREAS, in order to effectuate the Redevelopment Plan, the Project, and the redevelopment of the Project Area, the Town has determined to enter into this Redevelopment Agreement with FPD, which Redevelopment Agreement designates FPD as the “redeveloper” of the Project Area as the term “redeveloper” is defined in the Redevelopment Law and specifies the respective rights and responsibilities of the Town and the FPD with respect to the Project.

NOW, THEREFORE, it is on this ____ day of May, 2022, hereby resolved by the Town of Westfield as follows:

1. The recitals are hereby incorporated as if fully set forth herein.
2. The Town hereby designates FPD as the redeveloper (as that term is defined in the Redevelopment Law) of the Project Area.
3. The Town hereby approves and consents to the execution of the Redevelopment Agreement, substantially in the form annexed to this Resolution as Exhibit A, subject to minor revisions as deemed necessary by the Town’s counsel.
4. The Town Clerk and other Town staff and consultants are hereby authorized and directed to take all actions as shall be deemed necessary or desirable to implement this Resolution and the terms of the Redevelopment Agreement, and the Mayor shall be authorized and directed to execute the Redevelopment Agreement.
5. The Mayor is hereby authorized and directed to determine all matters and terms in connection with the Redevelopment Agreement, all in consultation with the counsel to the Town, and the manual or facsimile signature of the Mayor upon any documents shall be conclusive as to all such determinations. The Mayor, the Town Clerk and any other Town official, officer or professional, including but not limited to, Town legal counsel, redevelopment counsel, bond counsel, the financial advisor and the auditor to the Town, are each hereby authorized and directed to execute and deliver such documents as are necessary to facilitate the transactions contemplated hereby, and to take such actions or refrain from such actions as are necessary to facilitate the transactions contemplated hereby, in consultation with, as applicable, Town legal counsel, redevelopment counsel, bond counsel, the financial advisor and the auditor to the Town, and any and all actions taken heretofore with respect to the transactions contemplated hereby are hereby ratified and confirmed.
6. This Resolution shall be effective immediately.

REDEVELOPMENT AGREEMENT

By and between the

TOWN OF WESTFIELD

and

FERRIS PROSPECT DEVELOPMENT LLC

Dated: May __, 2022

THIS REDEVELOPMENT AGREEMENT (“**Redevelopment Agreement**” or “**Agreement**”) is made this _____ day of May, 2022 (the “**Effective Date**”), by and between the **TOWN OF WESTFIELD**, a municipal corporation and political subdivision of the State of New Jersey, having its offices at 425 East Broad Street, Westfield, New Jersey 07090 (the “**Town**”), and **FERRIS PROSPECT DEVELOPMENT LLC**, a New Jersey limited liability company, having its offices at 201 Prospect Street, Westfield, New Jersey 07090 (together with permitted successors or assigns as hereinafter provided, the “**Redeveloper**”). The Town and the Redeveloper shall be referred to herein each as a “**Party**” and together as the “**Parties**”.

RECITALS

A. The Local Redevelopment and Housing Law, *N.J.S.A. 40A:12A-1, et seq.*, as amended and supplemented (the “**Redevelopment Law**”), provides a process for municipalities to participate in the redevelopment and improvement of areas designated by the municipality as being in need of redevelopment.

B. Pursuant to the Redevelopment Law, on October 13, 2020, the Mayor and Council of the Town (the “**Governing Body**”) adopted Resolution Number 225-2020, declaring that the entirety of the Town met the statutory criteria for designation as an area in need of rehabilitation and designating all parcels within the Town as an area in need of rehabilitation (the “**Rehabilitation Area**”).

C. Included within the Rehabilitation Area are Block 2504, Lots 12, 13, and 14, as shown on the official tax maps of the Town, known commonly as 201 Prospect Street (Lots 12 and 13) and 112 Ferris Place (Lot 14) (collectively, the “**Project Area**”).

D. An 18th century historic home known as the “Mills-Ferris-Pearsall House” is currently situated upon 112 Ferris Place (Block 2504, Lot 14) (the “**Historic Home**”).

E. Following recommendation from the Town’s Historic Preservation Commission, the Governing Body adopted General Ordinance No. 2208-08 on February 22, 2022, designating the Historic Home as an historic landmark.

F. The Town retained the professional planning services of Topology which has prepared a redevelopment plan for the Project Area dated November 17, 2021, entitled the “*Prospect + Ferris Redevelopment Plan*,” a copy of which is on file with the Town Clerk (the “**Redevelopment Plan**”).

G. On December 7, 2021, following a review of consistency by the Town’s Planning Board (“**Planning Board**”), the Governing Body adopted General Ordinance No. 2231 approving and adopting the Redevelopment Plan for the Project Area.

H. Redeveloper is the owner of the properties comprising the Project Area.

I. Redeveloper proposes to remediate, develop, finance, construct, implement, and cohesively redevelop the Project Area into a mixed-use residential development consisting of a maximum 60 rental residential dwelling units (of which no less than 15% must be deed restricted as affordable housing units), 500 square feet of retail or café space, with 96 off-street parking spaces and

associated improvements and preservation of the Historic Home for future use as an educational and cultural amenity, all as further described herein (the “**Project**”).

J. Redeveloper proposes to complete the Project in accordance with the conceptual architectural floor plans, elevations and renderings entitled “*The Sophia - Westfield*” prepared by Marchetto Higgins Stieve, dated March 1, 2022, revised through May 13, 2022, the “Specific Parameters for Streetscape Improvements” (as referenced in the Redevelopment Plan) entitled “Streetscape Rendering Exhibit” prepared by Stonefield Engineering & Design dated May 13, 2022, and survey prepared by EKA Associates, P.A., dated September 15, 2021, collectively attached hereto as Exhibit A (together, the “**Concept Plans**”).

K. The Town has determined that the Redeveloper possesses the proper qualifications and experience to implement and complete the Project in accordance with the Redevelopment Plan, and all other Applicable Laws (as such term is hereinafter defined), ordinances and regulations.

L. In order to effectuate the Redevelopment Plan, the Project, and the redevelopment of the Project Area, the Town has determined to enter into this Redevelopment Agreement with the Redeveloper, which Redevelopment Agreement designates Redeveloper as the “redeveloper” of the Project Area as the term “redeveloper” is defined in the Redevelopment Law and specifies the respective rights and responsibilities of the Town and the Redeveloper with respect to the Project.

NOW THEREFORE, in consideration of the promises and mutual covenants herein contained, the parties hereto do hereby covenant and agree, each with the other, as follows:

ARTICLE 1 DEFINITIONS

1.1 Definitions. As used in this Redevelopment Agreement the following terms shall have the meanings ascribed to such terms below. Terms listed below in the singular form shall include the plural and words listed in the plural shall include the singular. Whenever the context may require, any pronoun that is used in this Redevelopment Agreement shall include the corresponding masculine, feminine and neuter. All references to Sections, Articles or Exhibits shall refer to Sections, Articles or Exhibits in this Redevelopment Agreement unless otherwise specified.

(a) The following terms shall have the meanings ascribed to them in the Recitals to this Redevelopment Agreement:

Agreement
Concept Plans
Effective Date
Governing Body
Historic Home
Party
Parties
Planning Board
Project

Project Area
Redeveloper
Redevelopment Agreement
Redevelopment Law
Redevelopment Plan
Rehabilitation Area
Town

(b) The following terms shall have the definitions ascribed to them herein:

"Affiliate" means with respect to any Person, any other Person directly or indirectly Controlling or Controlled by, or under direct or indirect common Control with such Person.

"Appeal Period" shall mean the period specified by statute or court rule within which an appeal may be taken by any party from the grant of any Governmental Approval.

"Applicable Laws" means all federal, State and local laws, ordinances, approvals, rules, regulations and requirements applicable thereto including, but not limited to, the Redevelopment Law, the MLUL, relevant construction codes including construction codes governing access for people with disabilities, and such other applicable zoning, sanitary, pollution and other environmental safety ordinances, laws and such rules and regulations promulgated thereunder, and all applicable Environmental Laws and applicable federal and state labor standards.

"Bond(s)" shall mean performance and maintenance guarantees and review escrows in accordance with the provisions of *N.J.S.A. 40:55D-53 et seq.* of the MLUL and all Applicable Laws.

"Building Permit" means a building permit issued by or on behalf of the Town for construction of the Project, excluding a demolition permit but including a footings and foundation permit.

"Business Days" means all days except Saturdays, Sundays and the days observed as public holidays by the Town.

"Certificate of Completion" means written acknowledgement by the Town in recordable form that a Redeveloper has Completed Construction of the Project in accordance with the requirements of this Redevelopment Agreement.

"Certificate of Occupancy" means a temporary or permanent certificate of occupancy as defined in the applicable ordinances of the Town and the applicable provisions of the Uniform Construction Code.

"Certified Project Costs" means a certification signed by the Redeveloper setting forth the total costs for the Project estimated to be necessary to Complete the Project, which shall include (i) the value of the land and improvements on the Project Area (which shall not exceed 115% of the equalized assessed value of the Project Area), (ii) architect, engineer, surveying, soil testing, and attorney fees, paid or payable by the Redeveloper in connection with the planning, construction and financing of the Project, (iii) Remediation costs certified by a licensed site remediation professional, (iv) construction costs certified by an independent and qualified architect licensed in the State of New Jersey, (v) insurance, interest and finance costs for construction, and (vi) any other cost that is customarily considered by an Institution when determining project costs for the purpose of calculating the debt-to-equity ratio of a construction loan.

"Commence Construction" or "Commencement of Construction" means the undertaking of any actual physical construction of any portion of the Project, including demolition, site preparation, environmental Remediation, construction of Improvements or construction or upgrading of infrastructure.

“Completion,” “Completion of Construction,” or “Complete(d) Construction” means the completion of construction of the Project in accordance with the Redevelopment Plan and this Redevelopment Agreement, sufficient for issuance of a Certificate of Occupancy and subject only to (i) completion of “punchlist” items or minor conditions of the Governmental Approvals, and (ii) installation of landscaping, if the delay in completion thereof is necessitated by seasonal concerns.

“Completion Notice” means written notification to the Town of Completion of Construction of the Project and request by the Redeveloper for the issuance by the Town of a Certificate of Completion.

“Construction Schedule” shall mean the schedule of construction activities and milestones for the Project attached hereto as Exhibit B.

“Control” (including the correlative meanings of the terms **“Controlling”** and **“Controlled”**), as used with respect to the Redeveloper, the power, directly or indirectly, to direct or cause the direction of the management policies of a Redeveloper, whether through the ownership of an interest in the Redeveloper, or by contract or otherwise.

“County” means Union County, New Jersey.

“Declaration of Covenants and Restrictions” means a written instrument to be executed by the Redeveloper and recorded in the Union County Clerk’s Office, substantially in the form annexed hereto as Exhibit C, intended to encumber the Project Area and to run with the land until a Certificate of Completion has been issued for the Project, except as otherwise expressly provided therein, setting forth certain statutory and contractual undertakings of and restrictions applicable to the Redeveloper and their successors and assigns in connection with the ownership, redevelopment or rehabilitation of the Project, all as more particularly described in Article 3.

“Environmental Laws” means all federal, State, regional, and local laws, statutes, ordinances, regulations, rules, codes, consent decrees, judicial or administrative orders or decrees, directives or judgments relating to pollution, damage to or protection of the environment, environmental conditions, or the use, handling, processing, distribution, generation, treatment, storage, disposal, manufacture or transport of hazardous substances, presently in effect or hereafter amended, modified, or adopted including, but not limited to, the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. §§ 9601- 9675); the Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6901 *et seq.*); the Clean Water Act (33 U.S.C. § 1251 *et seq.*); the New Jersey Spill Compensation and Control Act (*N.J.S.A. 58:10-23.11 et seq.*); the Industrial Site Recovery Act, as amended (*N.J.S.A. 13:1K-6 et seq.*); the New Jersey Underground Storage of Hazardous Substances Act (*N.J.S.A. 58:10A-21 et seq.*), the New Jersey Water Pollution Control Act (*N.J.S.A. 58:10A-1 et seq.*); the New Jersey Environmental Rights Act (*N.J.S.A. 2A:35A-1 et seq.*); the New Jersey Site Remediation Reform Act (*N.J.S.A. 58:10C-1 et seq.*); and the rules and regulations promulgated under any of the foregoing.

“Escrow Account” shall mean a dedicated, interest-bearing account established by the Town with a banking institution in the State of New Jersey insured by an agency of the federal government, or in any other fund or depository approved for such deposits by the State of New Jersey, in which the Town shall deposit and hold all Escrow Deposits, including the Initial Escrow Deposit.

“Escrow Deposit” shall mean a monetary deposit, including the Initial Escrow Deposit, made by the Redeveloper to the Town to be held by the Town in the Escrow Account.

“Estoppel Certificate” shall mean a signed certificate stating that (i) this Redevelopment Agreement is in full force and effect, (ii) there is no Event of Default under this Redevelopment Agreement (nor any event which, with the passage of time and the giving of notice would result in an Event of Default under this Redevelopment Agreement) or stating the nature of the Event of Default or other such event, if any, and (iii) any other matter reasonably requested.

“Event of Default” shall refer to, subject to a Force Majeure Event and tolling as provided elsewhere in this Redevelopment Agreement, one or more of the following:

(a) If at any time the Redeveloper shall: (i) generally not pay its debts as such debts become due, within the meaning of such phrase under Title 11 of the United States Code (or any successor to such statute), or admit in writing that it is unable to pay its debts as such debts become due; or (ii) make an assignment for the benefit of creditors; or (iii) file a voluntary petition under Title 11 of the United States Code, as the same may be amended, or any successor to such statute; or (iv) file any petition or answer seeking, consenting to or acquiescing in any reorganization, arrangement, composition, readjustment, liquidation, dissolution or similar relief under any present or future federal bankruptcy code or any other present or future applicable federal or state or other statute or law; or (v) seek or consent to or acquiesce in the appointment of any custodian, trustee, receiver, sequestrator, liquidator or other similar official of the Redeveloper or of all or any substantial part of its property or of the Project Area or any interest of the Redeveloper therein; or (vi) take any corporate action in furtherance of any action described in this subsection or (vii) if at any time any proceeding against the Redeveloper seeking any reorganization, arrangement, composition, readjustment, liquidation, dissolution or similar relief under any present or future applicable federal or state or other statute or law shall not be dismissed within ninety (90) days after the commencement thereof, or if, within ninety (90) days after the appointment without the consent of the Redeveloper of any custodian, trustee, receiver, sequestrator, liquidator or any other similar official of the Redeveloper, or of all or any substantial part of its properties or of the Project Area or any interest of the Redeveloper therein, such appointment shall not have been vacated or stayed on appeal or otherwise, or if any such appointment shall not have been vacated within forty-five (45) days after the expiration of any such stay;

(b) The Redeveloper’s failure to pay or delinquency in the payment of real property taxes or assessments, which failure or delinquency is not cured within sixty (60) days after Notice by the Town;

(c) Cancellation or termination by reason of any act or omission of the Redeveloper of any insurance policy, performance or completion bond, letter of credit, guaranty or other surety required hereunder to be provided by the Redeveloper for the benefit of the Town, which failure or delinquency is not cured within sixty (60) days after Notice by the Town;

(d) Any Transfer (except for Permitted Transfers) without the approval (or deemed approval pursuant to Section 3.5(c)) of the Town;

(e) If the Redeveloper fail to Commence Construction within the time frame specified in this Redevelopment Agreement (as same may be modified pursuant to the terms hereof and subject to a Force Majeure Event);

(f) Subject to a Force Majeure Event, if the Redeveloper abandons the Project or substantially suspends work on the Project after the Commencement of Construction for a period of more than sixty (60) days and fails to recommence work within thirty (30) days after receipt by the Redeveloper of a Notice of such failure, abandonment or suspension; provided, however, that if the failure, abandonment or suspension is one that cannot be completely cured within thirty (30) days after receipt of such Notice, Redeveloper shall have up to sixty (60) additional days to cure so long as the Redeveloper promptly undertake actions to correct the failure, abandonment or suspension upon its receipt of notice and is proceeding with due diligence to remedy same; and

(g) Any other default or breach by the Redeveloper or the Town in the observance or performance of any covenant, condition, representation, warranty or agreement hereunder and, except as otherwise specified below, the continuance of such default or breach for a period of thirty (30) days after Notice from the non-defaulting party specifying the nature of such default or breach and requesting that such default or breach be remedied; provided, however, with respect to any non-monetary default or breach, if the default or breach is one that cannot be completely remedied within thirty (30) days after such Notice, it shall not be an Event of Default as long as the defaulting party is proceeding in good faith and with due diligence to remedy the same as soon as practicable, but in no event later than ninety (90) days after such Notice unless this Redevelopment Agreement specifically provides otherwise.

“Existing Members” means the Persons owning membership interests in the Redeveloper as of the date of this Redevelopment Agreement, which Persons are set forth in Exhibit D annexed hereto.

“Final and Non-Appealable” shall mean, with respect to any Governmental Approval or other governmental approval or action, that all applicable Appeal Periods have expired without the filing of appeal, or if an appeal has been filed, that such appeal has been resolved in a manner that permits the Project to be implemented in accordance with the Concept Plans and this Agreement, by a final action as to which all Appeal Periods have expired without the filing of an appeal or which is otherwise not subject to further appeal.

“Force Majeure Event” means causes that are beyond the reasonable control and not substantially due to the fault or negligence of the party seeking to excuse delay or failure of performance of an obligation hereunder by reason thereof, including, but not limited to, third-party litigation that enjoins implementation of the Project; declarations of public emergency (other than as set forth below regarding the ongoing COVID-19 pandemic); acts of nature (as to weather-related events, limited to severe and unusual events or natural occurrences such as hurricanes, tornadoes, earthquakes, and floods); acts of the public enemy; acts of terrorism; acts of war; fire; blackouts, power failures, or energy shortages; governmental embargoes; strikes or similar labor action by equipment or material suppliers or transporters, or unavailability of necessary building materials. Notwithstanding the foregoing, the Parties acknowledge that this Agreement is being executed and performed during the COVID-19 pandemic and associated declarations of a “state of emergency” and/or “public health emergency” and that unavailability of labor and materials, slower timeframes to obtain approvals, and similar delays that may arise as a result of the pandemic have been considered and factored into the timelines set forth herein and thus, shall not be considered

Force Majeure Events.

“Foreclosure” shall mean either a Mortgagee’s foreclosure of its Mortgage secured by the Project, or a Mortgagee’s acquisition of title to the Project by deed-in-lieu of foreclosure or similar transaction (in its name or the name of an Affiliate).

“Governmental Approvals” means all governmental approvals required for the Commencement of Construction, Completion of Construction, and use and occupancy of the Project, including, without limitation, the Planning Board Approvals; County planning board approvals, if and to the extent required; Building Permits; environmental permits, approvals, consents or authorizations from NJDEP and any other applicable governmental agencies; sewerage capacity approvals, utilities-related permits and any and all other necessary governmental permits, licenses, consents and approvals.

“Institution” shall mean any savings and loan association, savings bank, commercial bank, or trust company (whether acting individually or in any fiduciary capacity), an insurance company, a real estate investment trust, an educational institution, or a state, municipal or similar public employee’s welfare, pension, or retirement system.

“Improvements” shall mean all improvements constructed as part of the Project.

“Initial Escrow Deposit” shall mean a \$65,000.00 Escrow Deposit made by the Redeveloper to the Town prior to the Effective Date, of which receipt is acknowledged by the Town, deposited, and held by the Town in the Escrow Account.

“Mayor” shall mean the Town’s Mayor.

“MLUL” shall mean the Municipal Land Use Law, *N.J.S.A. 40:55D-1 et seq.*, as amended from time to time.

“Mortgage” shall mean any security interest, evidenced by a written instrument, encumbering the Project Area, or any portion thereof, that secures the performance of obligations or the payment of debt, including, without limitation, any grant of, pledge of, or security interest in, any collateral, or any grant, directly or indirectly, of any deed of trust, mortgage or similar instrument or any other security whatsoever; provided however that, no Mortgage shall be imposed upon the Project Area which secures the performance of obligations or the payment of debt with respect to any property, project or undertaking outside of the Project Area.

“Mortgagee” shall mean the holder of any Mortgage.

“NJDEP” shall mean the New Jersey Department of Environmental Protection, and any successors in interest.

“Notice(s)” shall mean a notice, demand or other communication required to be given under this Redevelopment Agreement by any Party to the other.

“Parking Plan” shall mean, collectively, the parking and loading study dated May 13, 2022, 2022, prepared by Stonefield Engineering & Design, including conceptual shared parking analysis

and conceptual off-site parking strategy outlining the intended parking and loading plan for the Project on the Project Area and adjacent roadway network including analysis with respect to the parking supply, projected parking demand, and applicable parking regulations and ordinances, a copy of which is attached hereto as Exhibit E.

“Permitted Transfer” shall refer to the following types of Transfer:

(i) a Mortgage or related security granted by the Redeveloper to a Mortgagee for the purpose of obtaining the financing necessary to enable the Redeveloper to perform its obligations under this Agreement, including any Mortgage or Mortgages and other liens and encumbrances granted by the Redeveloper to a Mortgagee for the purpose of financing costs associated with the acquisition, development, construction, or marketing of the Project and not any transaction or project unrelated to the Project; provided, however, that the Redeveloper shall give the Town at least thirty (30) days prior written notice of such Permitted Transfer, including a description of the nature of such Transfer, and the name(s) and address(es) of the Mortgagee;

(ii) easements, restrictions, covenants or dedications of portions of interests in the Project Area as may be required for utilities for the Project or otherwise as conditions of Governmental Approvals, including but not limited to any sanitary sewer easement required by the Planning Board Approvals, and access and cross-easement agreements;

(iii) environmental covenants and restrictions imposed by a regulatory agency as a condition of any permit or approval;

(iv) lease agreements to a tenant or end user of the Project and parking license agreements for parking spaces;

(v) a Transfer to an Affiliate of the Redeveloper, to one or more of the Existing Members, or to an entity Controlled by one or more of the Existing Members, including but not limited to any lease in compliance with the terms of a Financial Agreement;

(vi) Transfers by devise or operation of law as a result of death of any individual;

(vii) Transfers to immediate family members or trusts established for the benefit of same for estate planning purposes; or

(viii) a Transfer pursuant to a Foreclosure, and any Transfer by any Mortgagee or any Mortgagee’s successor and/or assigns after Foreclosure.

“Person” means any individual, sole proprietorship, corporation, partnership, joint venture, limited liability company, trust, unincorporated association, urban renewal entity, institution, or any other entity.

“Planning Board Approvals” means preliminary and final site plan approval of the Planning Board with respect to the Project as set forth on the Concept Plans attached hereto, including any deviations and waivers from the Redevelopment Plan required by the Concept Plans and set forth in the Planning Board’s memorializing resolution.

“Remediation” means the performance and completion of all investigations and cleanup, and all other activities necessary or required for the cleanup or containment of hazardous substances, known or unknown, on, under, or migrating to or from the Project Area, in accordance with Applicable Law, Environmental Laws and Governmental Approvals.

“State” means the State of New Jersey.

“Town Code” shall mean the ordinances of the Town.

“Town Costs” shall mean (i) all reasonable outside professional and consultant fees, out of pocket costs or expenses incurred by the Town arising out of or in connection with the preparation, performance, administration, or enforcement of the Redevelopment Plan, this Redevelopment Agreement or arising out of or in connection with the Project; (ii) subject to the Redeveloper’s termination rights pursuant to Section 5.7, litigation costs arising out of or in connection with a dispute with a third party with respect to this Redevelopment Agreement or the Project; and (iii) any other out of pocket fee, cost or expense reasonably incurred by the Town, incurred either before or after the date of this Redevelopment Agreement, to satisfy its obligations under this Redevelopment Agreement or in furtherance of the Project, but shall not include any and all costs incurred in connection with the Redeveloper’s site plan application to the Planning Board and governed by the escrow deposited by the Redeveloper in connection with such application in accordance with the MLUL.

“Town Engineer” shall mean the municipal Engineer for the Town.

“Transfer” means (i) a sale or re-conveyance of all or any portion of the Project Area or Project by the Redeveloper to any other Person; (ii) a sale, pledge, joint venture, equity investment, or any other act or transaction involving or resulting in a change in Control of the Redeveloper as it exists on the date of this Redevelopment Agreement; (iii) a transfer of ten percent (10%) or more of the membership interest in Redeveloper to a Person other than an Institution; or (iv) any assignment of this Redevelopment Agreement to any other Person.

“Uniform Construction Code” shall mean Chapter 23 of Title 5 of the New Jersey Administrative Code, as may be amended or supplemented.

“United States Bankruptcy Code” shall mean 11 *U.S.C.* 1 *et seq.*, and the accompanying regulations.

1.2 Interpretation and Construction. In this Redevelopment Agreement, unless the context otherwise requires:

(a) The terms "hereby," "hereof," "hereto," "herein," "hereunder" and any similar terms, as used in this Redevelopment Agreement, refer to this Redevelopment Agreement, and the term "hereafter" means after, and the term "heretofore" means before the date of delivery of this Redevelopment Agreement.

(b) Words importing a particular gender mean and include correlative words of every other gender and words importing the singular number mean and include the plural number and vice versa.

(c) Words importing persons mean and include firms, associations, partnerships (including limited partnerships), trusts, corporations, limited liability companies and other legal entities, including public or governmental bodies, as well as natural persons.

(d) Any headings preceding the texts of the several Articles and Sections of this Redevelopment Agreement, and any table of contents or marginal notes appended to copies hereof, shall be solely for convenience of reference and shall not constitute a part of this Redevelopment Agreement, nor shall they affect its meaning, construction or effect.

(e) Unless otherwise indicated, all approvals, consents and acceptances required to be given or made by any Person or Party hereunder shall not be unreasonably withheld, conditioned, or delayed.

ARTICLE 2 REPRESENTATIONS AND WARRANTIES

2.1 Designation as Redeveloper. The Town hereby designates and appoints the Redeveloper as the “redeveloper” of the Project. For so long as this Redevelopment Agreement and the designation hereunder remain in effect, the Redeveloper shall have the exclusive right to redevelop the Project Area in accordance with the Redevelopment Plan, the Governmental Approvals, the Redevelopment Law and all other Applicable Laws, and the terms and conditions of this Redevelopment Agreement.

2.2 Representations and Warranties of the Town. The Town hereby makes the following representations and warranties:

(a) The Rehabilitation Area has been duly investigated and designated as an area in need of rehabilitation in compliance with the Redevelopment Law and all Applicable Laws and is currently in full force and effect;

(b) The Redevelopment Plan has been duly adopted in compliance with the Redevelopment Law and all Applicable Laws and is currently in full force and effect;

(c) The Governing Body is the redevelopment entity for the Town, is duly organized and existing under the laws of the State, and as such, has the legal power, right and authority pursuant to the Redevelopment Law to enter into this Redevelopment Agreement and the instruments and documents referenced herein to which the Town is a party, to consummate the transactions contemplated hereby, to take any steps or actions contemplated hereby, and to perform its obligations hereunder;

(d) The Town has authorized the execution of this Redevelopment Agreement by resolution, and has duly executed this Redevelopment Agreement;

(e) To the best of the Town’s knowledge, there are no writs, injunctions, orders or decrees of any court or governmental body that would be violated by the Town entering into or performing its obligations under this Redevelopment Agreement;

(f) This Redevelopment Agreement has been duly executed by the Town, and is valid and legally binding upon the Town and enforceable in accordance with its terms on the basis of laws presently in effect and the execution and delivery thereof shall not, with due effect and the execution and delivery thereof shall not, with due notice or the passage of time, constitute a default under or violate the terms of any indenture, agreement or other instrument to which the Town is a party;

(g) The Town represents that, to the best of its knowledge and belief, after diligent inquiry, there is no action, proceeding or investigation now pending, known, or believed to exist which questions the validity of the Redevelopment Plan or this Redevelopment Agreement or any action or act taken or to be taken by the Town pursuant to the Redevelopment Plan or Redevelopment Agreement; and

(h) The uses of the Project Area, as contemplated by this Redevelopment Agreement, are authorized by the Redevelopment Law, Applicable Laws, and the Redevelopment Plan.

2.3 Representations and Warranties of Redeveloper. The Redeveloper hereby make the following representations and warranties:

(a) The Redeveloper have the legal capacity to enter into this Redevelopment Agreement and perform each of the undertakings set forth herein and in the Redevelopment Plan as of the Effective Date;

(b) The Redeveloper is a duly organized and validly existing legal entity under the laws of the State and all necessary consents have been duly adopted to authorize the execution and delivery of this Redevelopment Agreement and to authorize and direct the persons executing this Redevelopment Agreement to do so for and on the Redeveloper's behalf;

(c) No receiver, liquidator, custodian or trustee of the Redeveloper shall have been appointed as of the Effective Date, and no petition to reorganize either of the Redeveloper pursuant to the United States Bankruptcy Code or any similar statute that is applicable to the Redeveloper shall have been filed as of the Effective Date;

(d) No adjudication of bankruptcy of either of the Redeveloper or a filing for voluntary bankruptcy by the Redeveloper under the provisions of the United States Bankruptcy Code or any other similar statute that is applicable to the Redeveloper has been filed;

(e) No indictment has been returned against the Redeveloper or any officer or shareholder of a Redeveloper;

(f) The Redeveloper's execution and delivery of this Redevelopment Agreement and its performance hereunder will not constitute a violation of any operating, partnership and/or stockholder agreement of either of the Redeveloper or of any agreement, mortgage, indenture, instrument or judgment, to which the Redeveloper is a party;

(g) To Redeveloper's actual knowledge and belief, after diligent inquiry, there is no action, proceeding or investigation now pending, known or believed to exist which (i) questions the validity of this Redevelopment Agreement or any action or act taken or to be taken by a Redeveloper

pursuant to this Redevelopment Agreement; or (ii) is likely to result in a material adverse change in the Redeveloper's property, assets, liabilities or condition which will materially and substantially impair its ability to perform pursuant to the terms of this Redevelopment Agreement;

(h) The Redeveloper's execution and delivery of this Redevelopment Agreement and its performance hereunder will not constitute a violation of any agreement, mortgage, indenture, instrument or judgment, to which a Redeveloper is a party;

(i) To the best of the Redeveloper's knowledge and belief after diligent inquiry, all information and statements included in any information submitted by Redeveloper to the Town and its agents are true and correct in all material respects including, but not limited to, information setting forth Redeveloper's background, experience, and financial qualifications (as presented to the Town on April 8, 2022, and on file with the Town Clerk). The Redeveloper acknowledges that the facts and representations contained in the information, submitted by the Redeveloper are a material factor in the decision of the Town to enter into this Redevelopment Agreement; and

(j) To the best of the Redeveloper's knowledge and belief after diligent inquiry, the Redeveloper is not delinquent with respect to any taxes, payments in lieu of tax, service charge, or similar obligations owed to the Town for any property situated in the Town.

ARTICLE 3 COVENANTS AND RESTRICTIONS

3.1 Declaration of Covenants and Restrictions. The Town will record the Declaration of Covenants and Restrictions with the Union County Clerk's Office, at Redeveloper's expense, immediately upon execution of this Agreement.

3.2 Description of Covenants. The following covenants and restrictions are imposed upon the Redeveloper, its successors, and assigns, and are intended to run with the land until a Certificate of Completion has been issued for the Project, except as otherwise provided:

(a) Redeveloper shall develop, finance, construct, operate and maintain the Project on the Project Area in accordance with Applicable Laws, Government Approvals, the Redevelopment Plan, and the Redevelopment Agreement including the obligation to use commercially reasonable efforts to meet all deadlines and timeframes as set forth in the Redevelopment Agreement.

(b) Redeveloper shall not make a Transfer without the written consent of the Town, which shall not be unreasonably withheld, conditioned, or delayed, except with respect to a Permitted Transfer.

(c) Redeveloper shall, in connection with its use or occupancy of the Project, not effect or execute any covenant, agreement, lease, conveyance or other instrument whereby the Project Area is restricted upon the basis of age, race, color, creed, religion, ancestry, national origin, sexual orientation, sex or familial status, and Redeveloper and their successors and assigns shall comply with all Applicable Laws prohibiting discrimination or segregation by reason of age, race, color, creed, religion, ancestry, national origin, sexual orientation, sex or familial status.

(d) Redeveloper shall, upon Completion of Construction, obtain all Certificates of Occupancy required authorizing the occupancy and uses of the Project Area for the purposes contemplated in the Redevelopment Agreement.

(e) Redeveloper shall cause the Project to be developed, financed, constructed, operated, and maintained at its sole cost and expense.

(f) Redeveloper shall not encumber, hypothecate, or otherwise use the Project Area, or any part thereof as collateral for any transaction unrelated to the Project.

(g) Redeveloper shall promptly pay the Town Costs and all taxes, service charges or similar obligations when owed to the Town with respect to the Project Area.

3.3 Form of Declaration of Covenants and Restrictions. The covenants and restrictions in Section 3.2 shall be recorded substantially in the form of a Declaration of Covenants and Restrictions annexed hereto as Exhibit C.

3.4 Effect and Duration of Covenants. It is intended and agreed that the covenants and restrictions set forth in Section 3.2 shall be covenants running with the land. All covenants in Section 3.2, in any event, and without regard to technical classification or designation, legal or otherwise, and except only as otherwise specifically provided in this Redevelopment Agreement, shall be binding, to the fullest extent permitted by law and equity, for the benefit and in favor of, and enforceable by the Town and its successors and assigns, and any successor in interest to the Project Area, or any part thereof, against the Redeveloper, their successors and assigns and every successor in interest therein, and any party in possession or occupancy of the Project Area or any part thereof. The agreements and covenants set forth in Section 3.2 shall cease and terminate automatically and without further action upon the issuance of a Certificate of Completion for the Project, except for those covenants which survive in accordance with the terms of the Declaration. Notwithstanding the foregoing, the covenant set forth in Section 3.2(c) shall remain in effect without limitation as to time. Upon the request of Redeveloper or any successor owner at any time after the issuance of a Certificate of Completion for the Project, the Town shall execute and deliver a discharge of the Declaration of Covenants and Restrictions in recordable form for the Project.

3.5 Enforcement by Town. In amplification, and not in restriction of the provisions of this Article 3, it is intended and agreed that the Town and its successors and assigns shall be deemed beneficiaries of the agreements and covenants set forth in Section 3.2 both for and in their own right but also for the purposes of protecting the interests of the community and other parties, public or private, in whose favor or for whose benefit such agreements and covenants shall run in favor of the Town for the entire period during which such agreements and covenants shall be in force and effect, without regard to whether the Town has at any time been, remains, or is an owner of any land or interest therein to or in favor of which such agreements and covenants relate.

3.6 Prohibition Against Transfers of Interests in Redeveloper. (a) The Redeveloper recognize the importance of this redevelopment Project to the general welfare of the community and that the identity of the Redeveloper, and their qualifications, are critical to the Town in entering into this Redevelopment Agreement. Except for a Permitted Transfer, the Town considers that a change in Control in Redeveloper, or a transfer of ten percent (10%) or more of the ownership interest in the Redeveloper entity is, for practical purposes, a Transfer or disposition of the Project. The

Redeveloper recognizes that it is because of such qualifications and identity that the Town is entering into this Redevelopment Agreement with the Redeveloper, and, in so doing, the Town is relying on the obligations of the Redeveloper and not some other Person for the faithful performance of all undertakings and covenants to be performed by the Redeveloper hereunder. As a result, except for Permitted Transfers, and without the prior written approval of the Town, which shall not be unreasonably withheld, conditioned or delayed, Redeveloper agree for itself and all successors in interest that there shall be no change in Control of either Redeveloper, nor shall there be any transfer of 10% or more of the ownership interest in either Redeveloper.

(b) Consent to a Permitted Transfer. The Town hereby consents, without the necessity of further approvals, to any Permitted Transfer.

(c) Approval of Transfers. Except for Permitted Transfers, the Redeveloper must obtain the Town's consent pursuant to the terms of this Section 3.6 prior to making any Transfer.

3.7 Town Covenants. The Town hereby covenants and agrees that:

(a) The Town agrees to support any applications for Governmental Approvals that are consistent with the terms of the Redevelopment Plan and this Agreement, and to execute and deliver any documents required to obtain such approvals and otherwise to cooperate with the Redeveloper with respect to the Governmental Approvals; provided that nothing contained in this Section 3.7(a) shall be deemed: (i) to constitute an approval of all or any portion of the Project for which applications have been submitted or are required or (ii) a waiver of the ability of any Governmental Authority, to exercise its statutorily authorized responsibilities with respect to such applications or Governmental Approvals. Without limiting the generality of the foregoing, the Town may (A) request that all agencies of the Town having jurisdiction over any of the Governmental Approvals expedite the processing of all applications for Governmental Approvals, (B) schedule, convene and conclude all required public hearings in a manner consistent with Applicable Laws, without undue delay, and (C) cause all of the planners, engineers and other consultants engaged by the Town and the Town to review and comment on all submittals by the Redeveloper in an expeditious manner.

(b) Provided the Redeveloper is in compliance with this Redevelopment Agreement, the Town shall undertake and complete, with due diligence, all its obligations under this Redevelopment Agreement.

(c) The Town shall not amend or cause the amendment of the Redevelopment Plan with respect to the Project Area in a manner that materially, adversely affects the Redeveloper or the Project during the term of this Agreement without the prior written consent of the Redeveloper, which consent shall not be unreasonably withheld, conditioned, or delayed.

(d) The Redeveloper have been designated as the exclusive Redeveloper of the Project Area (as more particularly set forth in Section 2.1) and shall have the exclusive right and obligation to redevelop the Project Area and implement the Project in accordance with the terms and conditions of this Redevelopment Agreement.

ARTICLE 4 PROJECT DETAILS

4.1 Approval of Concept Plans. The Town approves the Concept Plans and finds the Concept Plans to follow the Redevelopment Plan. Any substantial revision to the Concept Plans shall be submitted to the Mayor or the Mayor's designee for approval, which approval shall not be unreasonably withheld, conditioned, or delayed, unless such amendment shall be noncompliant with the Redevelopment Plan, in which case, such amendment to the Concept Plans shall be submitted to the Governing Body for approval together with a request to amend the Redevelopment Plan as necessary. For the avoidance of doubt, minor revisions to the Concept Plans that are not material need not be approved by the Mayor or the Council.

4.2 Schedule and Implementation of the Project.

(a) Within twelve (12) months of the Effective Date, the Redeveloper shall obtain all Governmental Approvals required for the Commencement of Construction of the Project, including Planning Board Approvals.

(b) Redeveloper shall Commence Construction of the Project within six (6) months after all Governmental Approvals are obtained.

(c) Redeveloper shall Complete Construction of the Project and obtain construction financing for the entire Project on or before twenty-four (24) months after the Commencement of Construction.

4.3 Conditions Related to the Project Schedule.

(a) If, subject to the provisions of this Agreement, the Redeveloper fails, or determines that it will fail, to meet any relevant date for the completion of a task set forth in the Project schedule set forth above, for any reason, the Redeveloper shall promptly provide notice to the Town stating: (i) the reason for the failure or anticipated failure, (ii) the Redeveloper's proposed method for correcting such failure, (iii) the Redeveloper's proposal for revising the schedule and (iv) the method or methods by which the Redeveloper proposes to achieve subsequent tasks by the relevant dates set forth in the revised Project schedule. Redeveloper's proposed revisions to the Project schedule shall be subject to the Mayor's and Mayor's designee's approval, which shall not be unreasonably withheld, conditioned, or delayed.

(b) If the Redeveloper does not obtain all necessary Governmental Approvals for the Project on terms and conditions acceptable to the Redeveloper in their sole discretion, or if the Parties determine that the Governmental Approvals for the Project cannot be obtained on terms and conditions acceptable to the Redeveloper, then either Party shall have the right to terminate this Redevelopment Agreement upon written notice to the other Party. No Governmental Approval shall be deemed to have been obtained (i) until the Appeal Period relating thereto has expired and no appeal has been taken, or (ii) if an appeal is filed within the applicable Appeal Period, until such appeal shall have been finally resolved in a manner sustaining the challenged Governmental Approval. If this Redevelopment Agreement is terminated pursuant to the terms of this Section 4.3(b) then except as expressly set forth in this Agreement to the contrary, this Redevelopment Agreement shall be of no further force and effect and the Parties hereto shall have no further rights, liabilities and/or obligations hereunder, except that Redeveloper shall remain responsible for all Town Costs. If an appeal is taken, all obligations under this Redevelopment Agreement shall be tolled during the pendency of such appeal.

(c) Construction activities shall generally be completed in accordance with the schedule of milestones set forth in the Construction Schedule, except as modified in this Redevelopment Agreement. In the event there is any contradiction or discrepancy between this Redevelopment Agreement and the Construction Schedule, this Redevelopment Agreement shall control.

4.4 Construction of the Project.

(a) Construction Hours. Construction practices and hours shall be in accordance with applicable Town Ordinances.

(b) Maintenance. The Project Area will be kept free of debris on a regular basis by the Redeveloper; provided, however, subject to weather conditions and Force Majeure Events that the Redeveloper agree to clean up the Project Area within twenty-four (24) hours of a specific, reasonable request by the Town that the Redeveloper do so or the close of the following Business Day, whichever is later. Should Redeveloper fail to comply with this obligation, then the Town may send the Redeveloper a second request, in writing, providing the Redeveloper with an additional twenty-four (24) hour period during which Redeveloper shall clean up the Project Area. Should Redeveloper fail to comply following the Town's second request, the Town may at its option undertake such maintenance and charge Redeveloper for the costs of same. The Redeveloper shall repair, at the Redeveloper's cost, any damage to the streets or sidewalks caused by the Redeveloper during the construction of the Project.

(c) Pedestrian Access and Safety. Prior to any construction activities, the Redeveloper shall obtain approval from the Town's Building Department for safety plans and specifications providing for pedestrian and property safety at and across the Project Area and the surrounding areas, as applicable, during construction. The Redeveloper shall keep the sidewalks abutting the Project Area clean and free of debris, ice, and snow during the construction of the Project. The Town acknowledges that for safety reasons, the sidewalks adjacent to the Project Area may need to be closed from time to time during construction of the Project. Notwithstanding the foregoing, the Redeveloper will provide appropriate signage and crosswalks to ensure the continued flow of pedestrian traffic.

(d) Construction Parking. The Redeveloper shall plan and coordinate with the Town's Construction Official and the Town's Police Department for off-street parking for construction vehicles and construction worker's vehicles if such vehicles cannot be parked on the Project Area itself. The Town agrees to have the Town place, from time to time, temporary "emergency, no parking" signs on the adjacent streets as reasonably requested by the Redeveloper to accommodate the Redeveloper's construction activities.

(e) Preconstruction Meeting. There shall be a preconstruction meeting held at least seven (7) days prior to the Commencement of Construction, which meeting shall include the Town's Construction Official, the Town's Engineer, a representative from the Town's Police Department, a representative from the Town's Fire Department and representatives from the various utility companies.

(f) Construction Signage. During construction, Redeveloper agrees to place prominent, construction signage in accordance with Section 16.04(R)(4) of the Town Code. The signage shall

be at least 24 square feet and shall depict the rendering of the Project attached hereto as Exhibit A to this Redevelopment Agreement, or a decorative construction fencing wrap with renderings and Town seal as approved by the Town Planner, or such other rendering approved by the Town Planner.

4.5 Certificates of Occupancy and Certificates of Completion.

(a) Upon Completion of Construction, the Redeveloper shall apply to the appropriate Town construction code official for a Certificate of Occupancy.

(b) Following Completion of the Project and satisfaction of all conditions precedent and prerequisites set forth in this Agreement, the Town agrees to issue a Certificate of Completion for the Project in the form attached hereto as Exhibit F, upon receipt of a Completion Notice from Redeveloper. The Certificate of Completion shall constitute a recordable, conclusive determination of the satisfaction and termination of the agreements and covenants with respect to the Project in this Redevelopment Agreement and the Redevelopment Plan. Within thirty (30) days after receipt of the Completion Notice, the Town shall provide Redeveloper with the applicable Certificate of Completion or a written statement setting forth in detail the reasons why it believes that a Certificate of Completion should not be issued in accordance with the provisions of this Agreement.

4.6 Project Costs and Financing.

(a) The Redeveloper agree that the costs and financing for the Project are the sole responsibility of the Redeveloper, not the Town.

(b) The Redeveloper shall post Bonds in the following manner:

(i) Prior to the Commencement of Construction, a performance bond or irrevocable letter of credit (or such other form of guarantee allowed in accordance with the MLUL) for those Improvements for which a performance guarantee may be required pursuant to the MLUL and as may be required pursuant to the approved site plan and Planning Board resolution, in an amount to be determined by the Town Engineer pursuant to the MLUL.

(ii) A maintenance guarantee in respect of those Improvements required to be bonded in accordance with the MLUL, in the form of a surety bond (or such other form of guarantee allowed in accordance with the MLUL) for a period not to exceed two (2) years after final acceptance of the Improvement, in an amount determined by the Town Engineer according to the method of calculation set forth in *N.J.S.A. 40:55D-53* of the MLUL.

(iii) If applicable, the Bond must name the Town as an obligee and the Redeveloper shall deliver a copy of the Bond to the Town prior to Commencement of Construction. To the extent that a surety bond is provided, it shall be provided by a company licensed by the New Jersey Department of Banking and Insurance or otherwise authorized by the New Jersey Department of Banking and Insurance to do business in the State. In the event any insurance company, financial institution or other entity issuing a performance guarantee herein, shall be insolvent or shall declare bankruptcy or otherwise be subject to reorganization, rehabilitation, or other action, whereby state or federal agencies have taken over the management of the entity, within thirty (30) days after notice from the Town, the Redeveloper shall replace the Bond.

(iv) In the event any Bond should lapse, be canceled or withdrawn, or otherwise not remain in full force and effect as a result of any act or omission by the Redeveloper, then until an approved replacement of the lapsed Bond has been deposited with the Town, the Town may require the Redeveloper to cease and desist any and all work on the Project, unless the Improvements required to be bonded have been completed and approved by the Town. In the event any Bond should lapse, be canceled or withdrawn, or otherwise not remain in full force and effect through no act or omission of the Redeveloper, then unless the Redeveloper fails to replace the Bond within ten (10) Business Days of notice given to the Redeveloper by the Town, the Town may require the Redeveloper to cease and desist work on the Project unless the Improvements required to be bonded have been completed and approved by the Town.

4.7 Environmental Obligations and Indemnification. The Parties hereto expressly acknowledge and agree that to the extent any portion of the Project Area requires Remediation, or causes any other property to require Remediation, the Town shall have no responsibility therefor. The Parties hereto expressly agree and acknowledge that it shall be the sole responsibility of the Redeveloper to undertake and pay the cost of all Remediation, compliance, environmental testing, and/or other analyses for the Project Area, and that the Town has no obligation or liability whatsoever with respect to the environmental condition of the Project Area, or any other parcels which may claim contamination arising from the Project Area. The Redeveloper shall defend, protect, indemnify, and hold harmless the Town and its agents from any claims which may be sustained because of any environmental conditions on, in, under or migrating to or from the Project Area, including, without limitation, claims against the Town and its agents by any third party.

4.09 No Rights in Third-Party Beneficiaries. Notwithstanding any of the foregoing, this Agreement does not and will not confer any rights, remedies, or entitlements upon any third person or entity other than the Parties and their respective successors and assigns. This Agreement is for the exclusive benefit and convenience of the Parties hereto.

4.10 Affordable Housing.

(i) Set-Aside. The Project shall provide an affordable housing set-aside of fifteen percent (15%) if the affordable housing units are to be offered for rent and twenty percent (20%) if the affordable units are to be offered for sale as condominium units, with fractional units rounded up. Specifically, if sixty (60) units are developed, 9 affordable housing units shall be provided in the Project as set forth in the Concept Plans.

(ii) Compliance with Applicable Laws, Distribution & Integration. Such affordable housing units shall be developed and rented at rates affordable to low-, very low- and moderate-income limits in accordance with all applicable regulations of Article 23 of the Land Use Ordinance of the Town Code, the state's Uniform Housing Affordability Controls, *N.J.A.C. 5:80-26.1, et seq.*, and Council on Affordable Housing regulations, *N.J.A.C. 5:97-1.1, et seq.*, with the exception that in lieu of ten percent (10%) of the affordable housing units required to be at least thirty-five percent (35%) of median income, thirteen percent (13%) of affordable housing units shall be required to be restricted to no more than thirty percent (30%) of median income. The Project shall not contain any three (3) bedroom market rate units. The only three (3) bedroom units permitted in the Project shall be the minimum number required to comply with Applicable Laws.

(iii) Marketing & Deed Restriction. Affirmative marketing and deed restriction requirements shall be in accordance with Applicable Laws. The deed restriction filed on the Project Area for the affordable housing units shall include a provision requiring that should the mixed-use building be converted to condominium ownership at any time during the duration of the affordable housing restriction, that an additional five percent (5%) of the total units (specifically, an additional three (3) residential dwelling units) shall be restricted for low-, very low-, or moderate-income limits as set forth herein.

(iv) Integration. All affordable housing units shall be constructed on site and integrated throughout the Project with the market-rate units.

(v) Non-Residential Development Fee. Excepting applicable exemptions, moratoriums, credits, and reductions, the commercial components of the Project shall be subject to the Statewide Non-Residential Development Fee Act which requires a fee of 2.5% of the equalized assessed value of the land and improvements. The Project shall adhere to the applicable requirements of Article 22 of the Land Use Ordinance of the Town Code entitled "*Affordable Housing Development Fee and Trust Fund*".

(vi) Survival. The provisions of this Section 4.10 shall survive beyond issuance of a Certificate of Completion or termination of this Agreement.

4.11 Project Conditions; Redeveloper's Termination Rights. Redeveloper may terminate this Redevelopment Agreement at any time if:

(a) Redeveloper has not obtained all Governmental Approvals on terms that permit construction of the Project, all of the conditions of which have been satisfied, and all of which approvals are Final and Non-Appealable; or

(b) Redeveloper has not obtained construction financing for the Project on commercially reasonable terms.

4.12 Green Project Features. The Project shall include the green features as set forth in the completed "*Green Building Features*" prepared by Marchetto Higgins Stieve attached hereto as Exhibit G. Prior to applying for and as a prerequisite of obtaining Building Permits, the Redeveloper shall submit a certification for approval by the Town Engineer and Town Planner certifying that the project meets the necessary criteria for LEED Certification. The Certification shall include appropriate references and citations to the construction plans to evidence same. The Redeveloper shall not be required to secure LEED Certification.

4.13 First Source Employment and Contracting. The Redeveloper shall make good faith efforts to employ and shall provide in its contracts with its contractors and subcontractors that they must make good faith efforts to employ residents of the Town in the construction of the Project consistent with reasonable wages, to the greatest extent feasible. The Redeveloper agrees to cooperate with the Town or its designee in developing a plan to coordinate training programs and employment recruitment efforts for Town residents. The Redeveloper will cooperate with efforts to recruit Town residents for all employment opportunities in connection with the Project, including participation in Town job fairs or similar events, if such exist. The Redeveloper agrees to meet with appropriate Town officials to determine the status of recruitment and training efforts, and to plan

future employment training and recruitment activities. All contracts executed by the Redeveloper for the construction of the Project shall contain appropriate language to effectuate this provision.

4.14 Affirmative Action. The Redeveloper, during the construction of the Project, covenants that it will comply with and shall provide in its contracts with its contractors and subcontractors, the following:

(a) The Redeveloper shall always conform to the laws, regulations, policies of the State, the Federal government, and other governmental bodies with respect to affirmative action and equal employment opportunities requirements, and particularly those which are imposed as a condition to receipt of any government sponsored funding for the Project, notwithstanding any other provision of this Agreement to the contrary.

(b) The Redeveloper shall use good faith and commercially reasonable efforts to undertake a program of preference to facilitate executing contracts with and/or purchasing goods and services from Minority Business Enterprises, Women's Businesses Enterprises, and Small Business Enterprises at a rate of at least 20%.

(c) All contracts executed by the Redeveloper for the construction of the Project shall contain appropriate language to effectuate this provision.

4.15 Reporting & Compliance. The Town shall oversee and monitor the Redeveloper's compliance with the requirements set forth in Sections 4.13 and 4.14. The Redeveloper agrees to meet periodically with the Town or its designated official(s) at the Town's request to discuss the status of the Redeveloper's compliance with the requirements set forth in Sections 4.13 and 4.14. The Redeveloper shall submit quarterly reports regarding compliance as the Town may reasonably require. Reports submitted by the Redeveloper shall include names, addresses, ethnic origin of those who apply and are interviewed for employment including those denied employment. Reports should also include businesses hired, recruitment efforts including advertisements and letters to community groups advising them of employment and business opportunities. The Entity covenants to enforce its contracts with its contractors and subcontractors if such parties are not in compliance with Sections 4.13 or 4.14. Non-compliance, after a reasonable opportunity to cure as set forth in Section 6.2, shall be deemed a material Event of Default under this Redevelopment Agreement.

4.16 Parking Plan. Redeveloper shall redevelop the Project Area and operate the Project in accordance with the Parking Plan attached hereto as Exhibit E. Redeveloper shall place appropriate signage at the Project Area to encourage compliance with the Parking Plan.

4.17 Electric Vehicle Supply Equipment and Make-Ready Parking Spaces. Redeveloper shall comply with the requirements of all Applicable Laws, including but not limited to *P.L. 2021, c.171*. As such, Redeveloper agrees to construct as part of the Project, adequate and convenient electric vehicle supply equipment, and make-ready parking spaces to serve the need of the traveling public in a quantity sufficient to satisfy *P.L. 2021, c.171*. Notwithstanding the provision of *P.L. 2021, c.171*, the Redeveloper shall supply the number of parking spaces as set forth in the Parking Plan and the Concept Plans without a bonus credit for parking space prepared with electric vehicle supply equipment or make-ready equipment.

4.18 Historic Home Protection and Restoration. Prior to, and as a condition of, applying

for a Certificate of Occupancy of the mixed-use building proposed on the Project, the Redeveloper shall protect and completely restore the Historic Home in strict conformance with the Protection Plan, an outline of which is attached hereto as Exhibit H. The final Protection Plan shall be vetted and approved by the Town and its professionals and formally approved prior to issuance of Building Permits. Construction of the Project shall take all steps necessary to protect and preserve the Historic Home from damage or loss in accordance with the Protection Plan. Notwithstanding anything herein to the contrary, implementation of the Protection Plan or any restoration of the Historic Home shall be subject to all necessary Governmental Approvals pursuant to the procedures set forth in the Historic Designation and Preservation Ordinance of the Town Code. The Redeveloper shall secure a Certificate of Occupancy for the Historic Home within thirty (30) days of receipt of the Certificate of Occupancy for the mixed-use building. The Historic Home shall be always maintained in good and habitable condition. The provisions of this Section 4.18 shall survive beyond issuance of a Certificate of Completion or termination of this Agreement.

4.19 Historic Reuse Plan. Prior to applying for Building Permits, Redeveloper shall negotiate and execute an agreement for a period of no less than ten (10) years with at least one (1) local and reputable non-profit or governmental organization experienced with providing programming in historic structures such as the Historic Home, and/or the Town, to plan for and provide programming of cultural and educational events in the Historic Home. Such agreement shall authorize the non-profit to utilize the Historic Home on a regular basis for cultural and/or education events on reasonable terms satisfactory to the Town and the Town's Redevelopment Counsel prior to execution. In addition to the programming to be offered by the non-profit organization, the Redeveloper shall cause to reuse the Historic Home in accordance with the Historic Reuse Plan attached hereto as Exhibit I. The provisions of this Section 4.19 shall survive beyond issuance of a Certificate of Completion or termination of this Agreement.

4.20 Traffic Impact Study & Traffic Signal Warrant Study. The Redeveloper has prepared, and the Town has accepted pursuant to Section 5.4 of the Redevelopment Plan, the Traffic Impact Study entitled "Traffic & Parking Assessment Report" dated April 26, 2022, and prepared by Stonefield Engineering & Design, a copy of which is attached hereto as Exhibit J. The Traffic Impact Study included, at Redeveloper's sole cost, a Traffic Signal Warrant Study evaluating the intersection at Prospect Street and E. Broad Street, to determine whether such intersection warrants the construction of a traffic signal or other traffic calming measures following construction of the Project. The Redeveloper shall not be responsible to install any signals or pay for same. The Town may rely upon and utilize the Traffic Impact Study and Traffic Signal Warrant Study for its own use.

ARTICLE 5

EVENTS OF DEFAULT; TERMINATION

5.1 Remedies Upon Event of Default by the Redeveloper. Whenever any Event of Default by the Redeveloper occurs and continues beyond any applicable cure or grace period, the Town may, on written notice to the Redeveloper (after applicable Notice and cure periods shall have expired), terminate this Redevelopment Agreement and the Redeveloper's respective designation as redeveloper hereunder upon which, except as expressly provided herein, this Redevelopment Agreement shall be void and of no further force and effect and neither Party shall have any further rights, liability and/or obligations hereunder. In addition, if the Redeveloper fail to pay any Town Costs in accordance with the requirements of this Redevelopment Agreement, the Town may file legal action seeking payment of the Town Costs.

5.2 Remedies Upon Event of Default by the Town. If an Event of Default by the Town occurs and continues beyond any applicable cure or grace period, then the Redeveloper may take whatever action at law or in equity as the Redeveloper may deem necessary or desirable to enforce the performance or observance of any rights or remedies of the Redeveloper, or any obligations, agreements, or covenants of the Town under this Redevelopment Agreement, including an action for specific performance and/or actual, compensatory damages (but specifically excluding delay, reliance, consequential or punitive damages). Further, but subject to any cure provisions afforded the Town hereunder, the Redeveloper shall have the right, in its sole and absolute discretion, on written notice to the Town (after applicable Notice and cure period shall have expired), to terminate this Redevelopment Agreement upon which, except as expressly provided for herein, this Redevelopment Agreement shall be void and of no further force and effect and neither Party shall have any further rights, liabilities and/or obligations hereunder.

5.3 Force Majeure Extension. For the purposes of this Redevelopment Agreement, neither the Town nor the Redeveloper shall be considered in breach or in default with respect to its obligations hereunder because of a delay in performance arising from a Force Majeure Event. It is the purpose and intent of this provision that in the event of the occurrence of any such delay, the time or times for performance of the obligations of the Town or the Redeveloper shall be extended for the period of the delay; provided, however, that such delay is actually caused by or results from the Force Majeure Event. The time for completion of any specified obligation hereunder shall be tolled for a period up to but not exceeding the period of delay resulting from the occurrence of a Force Majeure Event. During any Force Majeure Event that affects only a portion of a Project, the Redeveloper shall to the maximum extent feasible continue to perform its obligations for the balance of the Project unaffected by the Force Majeure Event. The existence of an event or occurrence of Force Majeure Event shall not prevent the Town or the Redeveloper from declaring a default or the occurrence of an Event of Default by the other party if the event that is the basis of the Event of Default is not a result of the Force Majeure Event.

5.4 No Waiver. Except as otherwise expressly provided in this Redevelopment Agreement, any failure or delay by either Party hereunder in asserting any of its rights or remedies as to any default by the other Party, shall not operate as a waiver of such default, or of any such rights or remedies, or to deprive the Town or the Redeveloper, as the case may be, of its right to institute and maintain any actions or proceedings in accordance with this Redevelopment Agreement, which it may deem necessary to protect, assert or enforce any such rights or remedies.

5.5 Remedies Cumulative. No remedy conferred by any of the provisions of this Redevelopment Agreement is intended to be exclusive of any other remedy and each remedy shall be cumulative and shall be in addition to every other remedy given hereunder.

5.6 Termination Rights Related to Litigation. If third-party litigation is commenced challenging the validity of (i) the designation of the Rehabilitation Area, (ii) the Redevelopment Plan, or (iii) execution of this Redevelopment Agreement by the Town, the commencement of such litigation shall be a Force Majeure Event effective as of the date of the filing of the summons and complaint if the Redeveloper invoke the Force Majeure Event provisions this of Redevelopment Agreement; provided, however, that (a) if such third-party litigation is not resolved within six (6) months of its commencement, the Redeveloper may terminate this Redevelopment Agreement, and (b) if such litigation is finally determined in favor of the plaintiff with no further opportunity for appeal, then

either Party may terminate this Redevelopment Agreement by written notice to the other. Upon such termination, this Agreement shall be void and of no further force and effect and neither Party hereto shall have any rights, liabilities and/or obligations hereunder.

ARTICLE 6 FINANCING & INSURANCE

6.1 Mortgage Financing.

(a) During the term of this Redevelopment Agreement, the Redeveloper shall not engage in any financing or any other transaction creating any Mortgage on the Project Area other than with respect to the cost of acquiring the Project Area and developing the Project (including designing, permitting, and constructing the Project). In no event, however, shall the Redeveloper create any Mortgage in which the amount of the Mortgage, either by itself or collectively with all prior Mortgages on the Project Area, exceeds 75% of the Certified Project Costs, therefore resulting in the Redeveloper maintaining less than 25% equity in the Project. Within ten (10) days of a request by the Town, the Redeveloper shall provide the Town with the Certified Project Costs and all other records and documentation necessary to evidence compliance with this Section.

(b) If, within eighteen (18) months following the Effective Date, or within six (6) months of obtaining all Governmental Approvals, whichever is earlier, the Redeveloper is unable to obtain financing for the Project on terms and conditions acceptable to the Redeveloper in their sole discretion, or if the Redeveloper determine that financing for the Project cannot be obtained on terms and conditions acceptable to the Redeveloper in their sole discretion, the Redeveloper shall have the right to terminate this Redevelopment Agreement upon written notice to the Town.

(c) If this Redevelopment Agreement is terminated pursuant to the terms of this Section 6.1, then, except as expressly set forth herein to the contrary and upon full payment of all Town Costs, this Redevelopment Agreement (including, without limitation, all the covenants contained herein) shall be of no further force and effect and the Parties hereto shall have no further rights, liabilities and/or obligations hereunder.

(d) If the Mortgagee reasonably requires any change(s) or modification(s) to the terms of this Redevelopment Agreement, the Town shall reasonably cooperate with the Mortgagee and the Redeveloper in reviewing such proposed change(s) or modification(s) and shall consider them in good faith; provided, however, that any such proposed change or modification shall not materially and adversely alter or modify the rights and obligations of the Redeveloper or the Town, as provided in this Redevelopment Agreement.

(e) To the extent reasonably requested by the Redeveloper, the Town shall execute such other agreements and/or documents (to the extent same are in form and content reasonably acceptable to the Town) as may be requested or required by any Mortgagee (or any equity participant of the Redeveloper); provided, however, that any such agreement or document shall not materially and adversely alter any of the rights, liabilities or obligations of the Redeveloper or the Town under this Redevelopment Agreement.

6.2 Notice of Default to the Mortgagee and Right to Cure. Whenever the Town shall deliver any Notice or demand to the Redeveloper with respect to any breach or default by the

Redeveloper under this Redevelopment Agreement, the Town shall at the same time deliver to each Mortgagee a copy of such notice or demand, provided that the Redeveloper has delivered to the Town a written notice of the name and address of such Mortgagee. Each such Mortgagee (insofar as the rights of the Town are concerned) has the right at its option within thirty (30) days after the receipt of such notice to cure or remedy, or to commence to cure or remedy, any such default which is subject to being cured and to add the cost thereof to the debt and the lien which it holds. The Town shall not seek to enforce any of its remedies under this Agreement during the period in which any such Mortgagee is proceeding diligently and in good faith to cure a Redeveloper's Event of Default. If the Mortgagee elects to cure the Event of Default within such 30-day period but has not completed such cure, then, not later than thirty (30) days thereafter until such Event of Default is cured, Redeveloper shall inform the Town that the Mortgagee is proceeding diligently to cure the Event of Default and shall briefly describe the course of action being pursued to effectuate such cure. Notwithstanding the foregoing, the Town may seek to enforce any of its remedies under this Agreement with respect to a monetary Event of Default if such monetary Event of Default is not cured within such thirty (30) day period after notice thereof. If possession of the Project Area is necessary to cure any default or breach, any Mortgagee will be allowed to complete any proceedings required to obtain possession of the Project Area. Notwithstanding anything contained herein to the contrary, the Town shall always retain all statutory rights to enforce the payment of property taxes, payments in lieu of taxes, sewer charges and other municipal charges, including but not limited to those rights granted by the Tax Lien Law and/or the In Rem Foreclosure Act.

6.3 No Guarantee of Construction or Completion by Mortgagee.

(a) A Mortgagee shall in no manner be obligated by the provisions of this Redevelopment Agreement to construct or complete the Project, or to guarantee such construction or completion; nor shall any covenant or any other provisions be construed to obligate a Mortgagee. Nothing contained in this Redevelopment Agreement shall be deemed to permit or authorize such Mortgagee to undertake or continue the construction or completion of the Project (beyond the extent necessary to conserve or protect the Mortgagee's security, including the improvements or construction already made) without the Mortgagee or Affiliate of Mortgagee first having expressly assumed the Redeveloper's obligations to the Town with respect to the Project by written agreement reasonably satisfactory to the Town.

(b) Upon a Foreclosure, the Mortgagee or its Affiliate shall have the option to either (i) sell the Project to any Person, provided Mortgagee gives the Town notice of such sale at least thirty (30) days prior to closing and provided such Person assumes the obligations of the Redeveloper under this Redevelopment Agreement in accordance with Applicable Law, and/or (ii) assume the obligations of the Redeveloper under this Redevelopment Agreement in accordance with Applicable Law. Any such Mortgagee, or other entity assuming such obligations of the Redeveloper, upon completing the Project shall be entitled, upon written request made to the Town, to a Certificate of Occupancy in accordance with the terms of this Redevelopment Agreement and under Applicable Laws. Nothing in this Redevelopment Agreement shall be construed or deemed to permit or to authorize any Mortgagee, or such other entity assuming such obligations of the Redeveloper, to devote the Project Area, or any part thereof, to any uses, or to construct any improvements thereon, other than those uses or improvements provided for or authorized by this Redevelopment Agreement and the Redevelopment Plan. The Mortgagee or such other entity that assumes the obligations of the Redeveloper shall be entitled to develop the Project Area or Project in accordance herewith.

6.4 Insurance. At all times during the construction of the Project, Redeveloper shall maintain or cause to be maintained at its own cost and expense, with responsible insurers, the following kinds and the following amounts of insurance with such variations as shall reasonably be required to conform to customary insurance practice:

(a) Builder's Risk Insurance for the benefit of the Redeveloper during the term of construction which will protect against loss or damage resulting from fire and lightning, the standard extended coverage perils, and vandalism and malicious mischief. The limits of liability will be equal to one hundred (100%) percent of the insurable value of the Project, including items of labor and materials connected therewith, whether in or adjacent to the structure insured, and materials in place or to be used as part of the permanent construction;

(b) Comprehensive General Liability Insurance (including coverage for any construction on or about each parcel of property contained within the Project Area) against claims for bodily injury, death or property damage occurring on, in or about the Project Area and the adjoining streets, sidewalks and passageways, in amounts not less than Three Million (\$3,000,000.00) Dollars for each claim with respect to any bodily injury or death, with respect to any one occurrence and Three Million (\$3,000,000.00) Dollars with respect to all claims for property damage relating to any one (1) occurrence;

(c) Worker's Compensation Insurance coverage in the amount of the full statutory liability of the Redeveloper; and

(d) Such other insurance, in such amounts and against such risks, as is customarily maintained by the Redeveloper with respect to other similar properties owned or leased by it, including automobile insurance and environmental liability.

Prior to the Commencement of Construction, the Redeveloper shall submit to the Town proof of all applicable insurance(s). Redeveloper shall provide such proof of insurance which indicates that the policy(ies) name the Town, its elected and appointed officials, officers, agents, servants, representatives, employees and/or its assigns and Town's consulting engineers, its officers, agents, servants, representatives, employees, successors and assigns, as additional insured with respect to their interest in work performed by the above named insured for the Project (except for Worker's Compensation or Automobile Coverage insurance, if applicable). The policy(ies) shall indemnify and hold harmless the Town, its elected and appointed officials, officers, agents, servants, representatives, employees, and/or its assigns, Town's consulting engineers, its officers, agents, servants, representatives, employees, successors and assigns, and its designated engineering consultants and their assigns and employees against any claims, liabilities, damages, costs or expenses of every kind and nature arising from Redeveloper's performance of Redeveloper's obligations pursuant to this Agreement, the failure by Redeveloper to perform such obligations, any action or failure to act by Redeveloper with respect to the Project to which this Agreement is applicable or in connection with any allegation of any of the foregoing. Upon each anniversary date of this Redevelopment Agreement, the Redeveloper shall submit the aforementioned proofs of insurance until the Town's issuance of a Certificate of Completion for the Project.

ARTICLE 7 ESCROW ACCOUNT

7.1 Escrow Account to Cover Town Costs.

(a) Immediately following execution of this Agreement, Redeveloper shall deposit the Initial Escrow Deposit to cover all Town Costs pursuant to the terms of this Redevelopment Agreement, including those costs incurred by the Town prior to the Effective Date.

(b) If at any time the balance in the Escrow Account is less than ten thousand dollars (\$10,000.00), the Town shall provide Redeveloper with a written Notice of the insufficient escrow deposit balance. Within ten (10) business days of such Notice, the Redeveloper shall deposit into the Escrow Account additional funds such that the total amount on deposit in the Escrow Account shall be not less than fifteen thousand dollars (\$15,000.00), or such lower amount as set forth by the Town in its Notice.

(c) The Town Costs shall be charged to the Escrow Account pursuant to a voucher from the Town's professional, identifying the personnel performing the Reimbursable Activities, each date the services were performed, the hours spent, the hourly rate, and a description of the services provided. All professionals shall submit the required vouchers or statements to the Town or Town in accordance with procedures established by the Town or Town. The Town shall provide the Redeveloper with invoices, along with copies of such vouchers or other receipts or back-up information, setting forth the Town Costs incurred by the Town or Town which the Town determines are to be paid from the Escrow Account.

(d) Any disputes arising over charges made for Town Costs shall be governed by the processes set forth under *N.J.S.A. 40:55D-53.2a*. Prior to filing a formal appeal, the Redeveloper shall first notify the Town of its dispute. If notification of an objection is made, the Parties agree to make good faith efforts to resolve the dispute. If the matter is not resolved by the Parties to the satisfaction of the Redeveloper, the Redeveloper may make a formal appeal to the Union County Construction Board of Appeals.

(e) Upon the termination of this Agreement, or upon Redeveloper's request (no more frequently than every sixty (60) days), the Town shall prepare and send to Redeveloper a statement that shall include an accounting of funds listing all deposits, disbursements, and the cumulative balance of the Escrow Account.

(f) Upon the issuance of a Certificate of Completion for the Project or upon the earlier termination of this Agreement, the Town shall instruct its professional(s) to render a final bill to the Town within thirty (30) days. Within thirty (30) days of receipt of the final bill, the Town shall pay all outstanding bills in accordance with this Agreement and render a written final accounting to the Redeveloper detailing the uses to which the escrow funds were put. Redeveloper will not be responsible for any additional charges once the final accounting has been rendered by the Town in accordance with this Section 7.1(f), except as specified in this Redevelopment Agreement.

ARTICLE 8 MISCELLANEOUS

8.1 No Consideration for Agreement. The Redeveloper warrants that it has not paid or given, and will not pay or give, any third person any money or other consideration for obtaining

this Redevelopment Agreement, other than normal costs of conducting business and costs of professional services such as architects, engineers, financial consultants, and attorneys. The Redeveloper further warrant they have not paid or incurred any obligation to pay any officer or official of the Town, any money or other consideration for or in connection with this Redevelopment Agreement.

8.2 Non-Liability of Officials and Employees.

(a) No member, official or employee of the Town shall be personally liable to the Redeveloper, or any successor in interest, in the event of any default or breach by the Town, or for any amount which may become due to the Redeveloper or their successor, or on any obligation under the terms of this Redevelopment Agreement.

(b) No member, officer, shareholder, director, partner, or employee of the Redeveloper shall be personally liable to the Town, or any successor in interest, in the event of any default or breach by the Redeveloper or for any amount which may become due to the Town, or their successors, on any obligation under the terms of this Redevelopment Agreement.

8.3 Inspection of Books and Records. The Town shall have the right during normal business hours and subject to reasonable advance notice (but not less than seven (7) Business Days) to inspect at Redeveloper's place of business, the books and records of Redeveloper pertinent to the purposes of this Agreement, including but not limited to construction contracts, books and records and insurance policies.

8.4 Conflict of Interest. No member, official or employee of the Town shall have any direct or indirect interest in either Redeveloper or this Agreement, nor participate in any decision relating to this Agreement that is prohibited by law.

8.5 Modification of Agreement. No modification, waiver, amendment, discharge, or change of this Redevelopment Agreement shall be valid unless the same is in writing, duly authorized, and signed by the Redeveloper and the Town.

8.6 Recitals and Exhibits. The Recitals and all Exhibits annexed to this Redevelopment Agreement are hereby made a part of this Redevelopment Agreement by this reference thereto.

8.7 Entire Agreement. This Redevelopment Agreement constitutes the entire agreement between the Parties hereto and supersedes all prior oral and written agreements between the Parties with respect to the subject matter hereof.

8.8 Severability. The validity of any Article and Section, clause or provision of this Redevelopment Agreement shall not affect the validity of the remaining Articles and Sections, clauses, or provisions hereof.

8.9 Indemnification. The Redeveloper, for themselves and their successors and assigns, covenant and agree, at its sole cost and expense, to indemnify, defend and hold harmless the Town, its governing body, their respective officers, employees, agents, attorneys and consultants, representatives and employees, agents, attorneys and consultants, representatives and employees and respective successors and assigns from any third-party claims, liabilities, losses, costs, damages,

penalties and expenses (including reasonable attorneys' fees) resulting from or in connection with the acts or omissions of the Redeveloper or of the Redeveloper's agents, employees, or consultants in connection with the development, financing, design, construction, operation, or maintenance of the Project; provided, however, that no indemnification shall be required pursuant to this Section 8.9 in the event that the indemnification otherwise due pursuant to this Section 8.9 is attributable to the gross negligence or willful misconduct of the Town, its governing body, or any agency of the Town or any of their respective officers, employees, agents, attorneys, consultants, representatives and employees. This Section shall survive termination of this Redevelopment Agreement.

8.10 Notices. Notices shall be in writing and shall be sufficiently given or delivered if dispatched by United States Registered or Certified Mail, postage prepaid and return receipt requested, or delivered by overnight courier or delivered personally (with receipt acknowledged), or by facsimile transmission (with a hard copy and a transmission confirmation sent by a recognized overnight national carrier service for next Business Day delivery) to the parties at their respective addresses set forth herein, or at such other address or addresses with respect to the parties or their counsel as any party may, from time to time, designate in writing and forward to the others as provided in this Section.

As to the Town:

Town of Westfield
425 East Broad Street
Westfield, New Jersey 07090
ATTN: Municipal Clerk

With copies to:

Steven G. Mlenak, Esq.
Greenbaum, Rowe, Smith & Davis, LLP
75 Livingston Avenue, Suite 301
Roseland, NJ 07068

As to Redeveloper:

Ferris Prospect Development LLC
201 Prospect Street
Westfield, New Jersey 07090

With a copy to:

Steven J. Zweig, Esq.
Law Office of Steven J. Zweig
180 Glenridge Avenue
Montclair, New Jersey 07042

From time to time either Party may designate a different person or address for all the purposes of this Notice provision by giving the other party no less than ten (10) days' Notice in

advance of such change of address in accordance with the provisions hereof. Notices shall be effective upon the earlier of receipt or rejection of delivery by the addressee, provided, that any notice delivered by telecopy shall be deemed to have been received by such Party at the time of transmission, provided that a hard copy and transmission confirmation is simultaneously sent by a recognized overnight national carrier service for next Business Day delivery. Any notice given by an attorney for a Party shall be effective for all purposes.

8.11 Further Assurances/Cooperation. The Parties shall cooperate with each other as reasonably necessary to effectuate the Project. From time to time at the request of either Redeveloper or the Town, the other Party shall execute, acknowledge, and deliver such other and further documents as the requesting Party may reasonably request to better effectuate the provisions of this Redevelopment Agreement.

8.12 Governing Law, Forum Selection, and Waiver of Jury Trial. The Parties agree that this Redevelopment Agreement shall be governed by and interpreted according to the laws of the State of New Jersey, without reference to the choice of law principles thereof. Each of the Parties hereto irrevocably submits to the jurisdiction of the Superior Court of New Jersey, Union County, for the purpose of any suit, action, proceeding, or judgment relating to or arising out of this Redevelopment Agreement and the transactions contemplated thereby. Each of the Parties hereto irrevocably consents to the jurisdiction of the Superior Court of New Jersey, Union County, in any such suit, action or proceeding and to the laying of venue in such Court. Each Party hereto irrevocably waives any objection to the laying of venue of any such action or proceeding brought in said Court and irrevocably waives any claim that any such suit, action or proceeding brought in said Court has been brought in any inconvenient forum. The Parties further agree that any claims relating to or arising out of this Redevelopment Agreement and the transactions contemplated thereby shall be tried before a Judge and without a trial by jury.

8.13 Counterparts. This Redevelopment Agreement may be executed in one or more counterparts (which may be copies delivered electronically or by facsimile), each of which shall be deemed to be an original, but all of which taken together shall constitute one and the same agreement.

8.14 Estoppel Certificates. Within fourteen (14) days following written request therefore by a Party hereto (which request may be on behalf of any Mortgagee, purchaser, tenant, or other party having an interest in the Project Area), the other Party shall issue an Estoppel Certificate.

~Signature Page to Follow~

IN WITNESS WHEREOF, the parties have executed this Redevelopment Agreement effective as of the latest date of the signatures affixed hereto.

Attest:

TOWN OF WESTFIELD

Name:

Title:

Dated: _____

By:

Mayor Shelley Brindle

Witness:

FERRIS PROSPECT DEVELOPMENT LLC

Name:

Title:

Dated: _____

By:

Name: James Ward

Title: Principal

ACKNOWLEDGMENT

STATE OF NEW JERSEY :

: ss

COUNTY OF UNION :

BE IT REMEMBERED, that on this ____ day of May, 2022, before me personally appeared **Mayor Shelley Brindle** who being by me duly sworn on her oath, deposes and makes proof to my satisfaction that she is the designated authorized signatory of the **TOWN OF WESTFIELD**, the entity named in the within Instrument; that the execution, as well as the making of this Instrument, have been duly authorized by the entity and said Instrument was signed and delivered by said designated authorized signatory as and for the voluntary act and deed of said entity.

Notary Public

STATE OF NEW JERSEY :

: ss

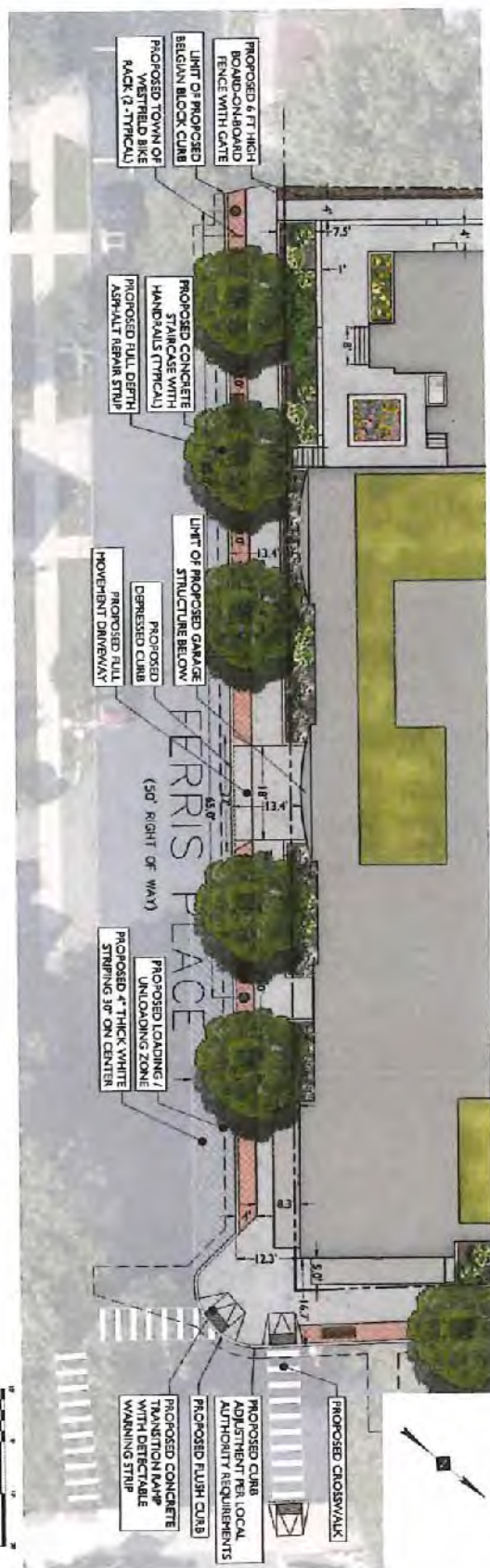
COUNTY OF UNION :

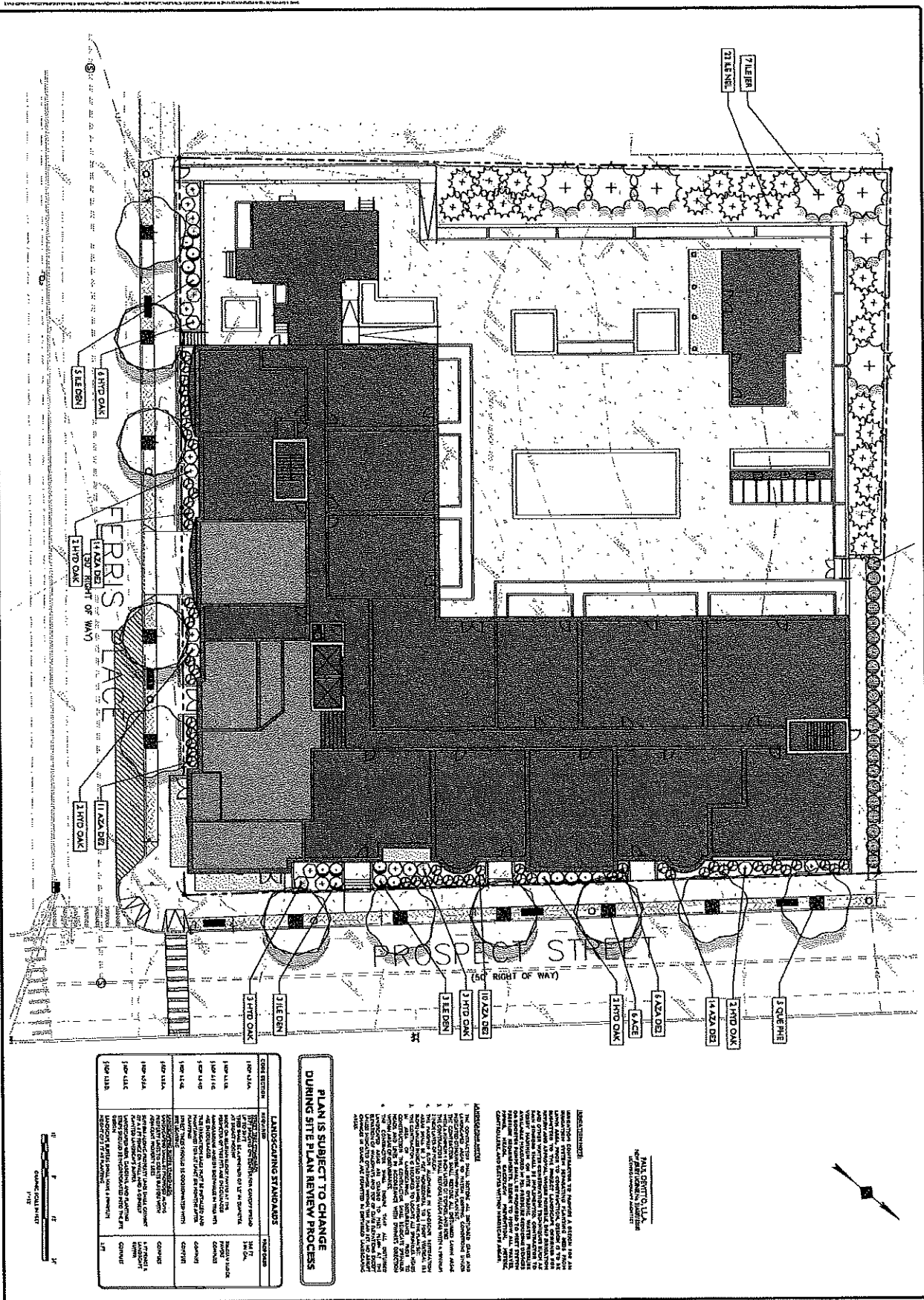
BE IT REMEMBERED, that on this ____ day of May, 2022, before me personally appeared **Gregory J. Redington** who being by me duly sworn on his oath, deposes and makes proof to my satisfaction that he is the designated authorized signatory of **FERRIS PROSPECT DEVELOPMENT LLC**, the entity named in the within Instrument; that the execution, as well as the making of this Instrument, have been duly authorized by the entity and said Instrument was signed and delivered by said designated authorized signatory as and for the voluntary act and deed of said entity.

Notary Public

EXHIBIT A

Concept Plans





PRELIMINARY & FINAL MAJOR SITE PLAN

THE SOPHIA

PROPOSED MIXED-USE DEVELOPMENT

Block 2504, Lots 12, 13, & 14
201 PROSPECT STREET
TOWN OF WESTFIELD
UNION COUNTY, NEW JERSEY

STONEFIELD
engineering & design

Princeton, NJ • New York, NY • Boston, MA
Princeton, NJ • Tampa, FL • District, PA
www.stoniefdesign.com

25 Spring Street, Princeton, NJ 08542
Phone 609.362.6700

NOT FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION

LANDSCAPING STANDARDS

CODE	DESCRIPTION	PLANT SPECIES	PLANT SIZE
10' AKA DBI	10' American Oak	Quercus alba	10' DBI
12' HYD OAK	12' Hybrid Oak	Quercus sp.	12' DBI
14' AKA DBI	14' American Oak	Quercus alba	14' DBI
16' HYD OAK	16' Hybrid Oak	Quercus sp.	16' DBI
18' AKA DBI	18' American Oak	Quercus alba	18' DBI
20' HYD OAK	20' Hybrid Oak	Quercus sp.	20' DBI
22' AKA DBI	22' American Oak	Quercus alba	22' DBI
24' HYD OAK	24' Hybrid Oak	Quercus sp.	24' DBI
26' AKA DBI	26' American Oak	Quercus alba	26' DBI
28' HYD OAK	28' Hybrid Oak	Quercus sp.	28' DBI
30' AKA DBI	30' American Oak	Quercus alba	30' DBI
32' HYD OAK	32' Hybrid Oak	Quercus sp.	32' DBI
34' AKA DBI	34' American Oak	Quercus alba	34' DBI
36' HYD OAK	36' Hybrid Oak	Quercus sp.	36' DBI
38' AKA DBI	38' American Oak	Quercus alba	38' DBI
40' HYD OAK	40' Hybrid Oak	Quercus sp.	40' DBI
42' AKA DBI	42' American Oak	Quercus alba	42' DBI
44' HYD OAK	44' Hybrid Oak	Quercus sp.	44' DBI
46' AKA DBI	46' American Oak	Quercus alba	46' DBI
48' HYD OAK	48' Hybrid Oak	Quercus sp.	48' DBI
50' AKA DBI	50' American Oak	Quercus alba	50' DBI
52' HYD OAK	52' Hybrid Oak	Quercus sp.	52' DBI
54' AKA DBI	54' American Oak	Quercus alba	54' DBI
56' HYD OAK	56' Hybrid Oak	Quercus sp.	56' DBI
58' AKA DBI	58' American Oak	Quercus alba	58' DBI
60' HYD OAK	60' Hybrid Oak	Quercus sp.	60' DBI
62' AKA DBI	62' American Oak	Quercus alba	62' DBI
64' HYD OAK	64' Hybrid Oak	Quercus sp.	64' DBI
66' AKA DBI	66' American Oak	Quercus alba	66' DBI
68' HYD OAK	68' Hybrid Oak	Quercus sp.	68' DBI
70' AKA DBI	70' American Oak	Quercus alba	70' DBI
72' HYD OAK	72' Hybrid Oak	Quercus sp.	72' DBI
74' AKA DBI	74' American Oak	Quercus alba	74' DBI
76' HYD OAK	76' Hybrid Oak	Quercus sp.	76' DBI
78' AKA DBI	78' American Oak	Quercus alba	78' DBI
80' HYD OAK	80' Hybrid Oak	Quercus sp.	80' DBI
82' AKA DBI	82' American Oak	Quercus alba	82' DBI
84' HYD OAK	84' Hybrid Oak	Quercus sp.	84' DBI
86' AKA DBI	86' American Oak	Quercus alba	86' DBI
88' HYD OAK	88' Hybrid Oak	Quercus sp.	88' DBI
90' AKA DBI	90' American Oak	Quercus alba	90' DBI
92' HYD OAK	92' Hybrid Oak	Quercus sp.	92' DBI
94' AKA DBI	94' American Oak	Quercus alba	94' DBI
96' HYD OAK	96' Hybrid Oak	Quercus sp.	96' DBI
98' AKA DBI	98' American Oak	Quercus alba	98' DBI
100' HYD OAK	100' Hybrid Oak	Quercus sp.	100' DBI

LANDSCAPING PLAN

1 OF 1

PRELIMINARY AND FINAL SITE PLAN

THE SOPHIA
MULTI-FAMILY DEVELOPMENT
FOR
FERRIS PROSPECT DEVELOPMENT, LLC
112 FERRIS PLACE,
201 PROSPECT STREET
215 PROSPECT STREET
WESTFIELD, NJ 07090
TOWN OF WESTFIELD, UNION COUNTY, NEW JERSEY



2 RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET



1 SITE PLAN
SCALE: 1"=60'-0"

0' 60' 120'

PROJECT DATA	
DATE: 12/15/2023	PROJECT: 23-00000
DATE: 12/15/2023	PROJECT: 23-00000
DATE: 12/15/2023	PROJECT: 23-00000
DATE: 12/15/2023	PROJECT: 23-00000
DATE: 12/15/2023	PROJECT: 23-00000
DATE: 12/15/2023	PROJECT: 23-00000
DATE: 12/15/2023	PROJECT: 23-00000
DATE: 12/15/2023	PROJECT: 23-00000
DATE: 12/15/2023	PROJECT: 23-00000
DATE: 12/15/2023	PROJECT: 23-00000

DRAWING LIST	
NO.	DESCRIPTION
1	GENERAL NOTES
2	RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET
3	RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET
4	RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET
5	RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET
6	RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET
7	RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET
8	RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET
9	RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET
10	RENDERED IMAGE FROM CORNER OF FERRIS PLACE & PROSPECT STREET

PLANNING BOARD APPROVAL	
DATE	12/15/2023
TIME	10:00 AM
LOCATION	PLANNING BOARD MEETING ROOM
AGENDA	1. PRESENTATION BY FERRIS PROSPECT DEVELOPMENT, LLC
2.	DISCUSSION AND PUBLIC COMMENT
3.	BOARD ACTION

SITE PLAN DATA	
DATE	12/15/2023
TIME	10:00 AM
LOCATION	PLANNING BOARD MEETING ROOM
AGENDA	1. PRESENTATION BY FERRIS PROSPECT DEVELOPMENT, LLC
2.	DISCUSSION AND PUBLIC COMMENT
3.	BOARD ACTION

FERRIS PROSPECT DEVELOPMENT, LLC	
112 FERRIS PLACE	WESTFIELD, NJ 07090
201 PROSPECT STREET	WESTFIELD, NJ 07090
215 PROSPECT STREET	WESTFIELD, NJ 07090
CONTACT: JAMES A. WOODS, P.E.	112 FERRIS PLACE
CONTACT: JAMES A. WOODS, P.E.	112 FERRIS PLACE
CONTACT: JAMES A. WOODS, P.E.	112 FERRIS PLACE

Marchetto Higgins Shreve	
ARCHITECTS	112 FERRIS PLACE
ARCHITECTS	112 FERRIS PLACE
ARCHITECTS	112 FERRIS PLACE
ARCHITECTS	112 FERRIS PLACE
ARCHITECTS	112 FERRIS PLACE
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ARCHITECTS	112 FERRIS PLACE
ARCHITECTS	112 FERRIS PLACE

FERRIS PROSPECT DEVELOPMENT, LLC	
112 FERRIS PLACE	WESTFIELD, NJ 07090
201 PROSPECT STREET	WESTFIELD, NJ 07090
215 PROSPECT STREET	WESTFIELD, NJ 07090
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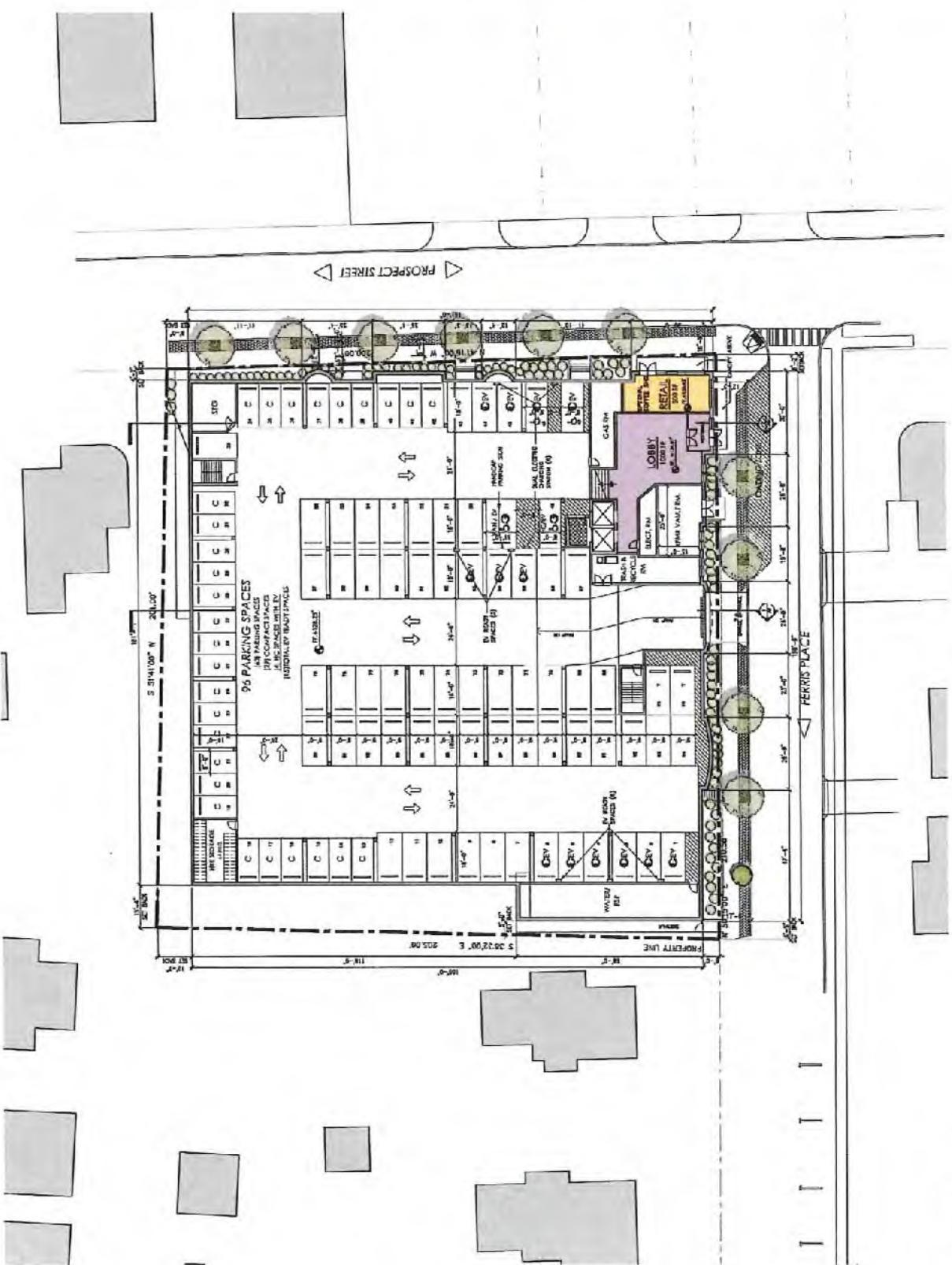
FERRIS PROSPECT DEVELOPMENT, LLC	
112 FERRIS PLACE	WESTFIELD, NJ 07090
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CONTACT: JAMES A. WOODS, P.E.	112 FERRIS PLACE
CONTACT: JAMES A. WOODS, P.E.	112 FERRIS PLACE

COVER SHEET C1

DATE: 12/15/2023



BEDROOM	18
BEDROOM *	17
2 BEDROOM	28
3 BEDROOM	2
TOTAL UNITS	65

BEDROOM	18
BEDROOM *	17
2 BEDROOM	28
3 BEDROOM	2
TOTAL UNITS	65

AFFORDABLE UNITS
1 BEDROOM
2 BEDROOM
3 BEDROOM
TOTAL

1 BED ROOM +
2 BATHS
2 BEDROOMS

Marchetto
Higgins
Stieve

Archives
Library
Library

235 W. Jane Avenue
New York, N.Y. 10014

• **1997** – 1998

11 March 2005

applicant: _____

ERKIS PROSPECT
DEVELOPMENT, LLC

12 Fernis Place

01 Prospect Street

15 Prospect Street
Westfield, NJ 07090

Department:

ERRIS PROSPECT

12 Fortis Place

01 Prospect Street

15 Prospect Street
Westfield, MA 01090[illegible]

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3	
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Page 1	Page 2
Page 3	Page 4

PROTECTOR	PROTECTOR
PROTECTOR	PROTECTOR

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100

GROUND FLOOR

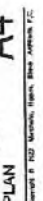
LAN

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 399–406

A2
GROUND FLOOR
PLAN

1 GROUND FLOOR PLAN
SCALE: 1/16" = 1'-0"





1 3RD FLOOR PLAN
SCALE: 1/8"=1'-0"

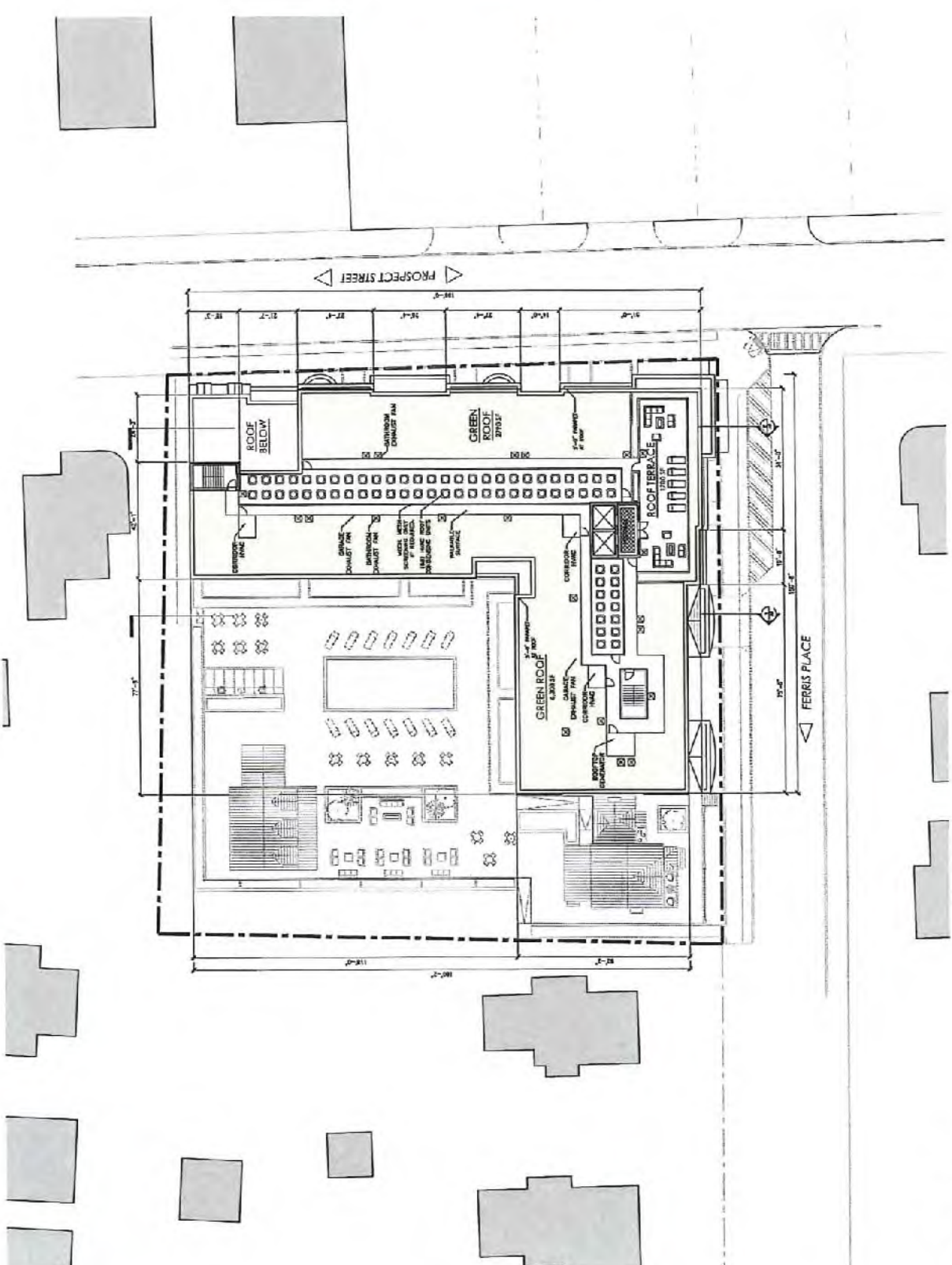


Marchetto Higgins Stieve
 Architects
 333 West 10th Street
 Westfield, NJ 07090
 Tel: 908-735-1100
 Fax: 908-735-1101
 www.mhst.com

FERRIS PROSPECT DEVELOPMENT, LLC
 112 Ferris Place
 201 Prospect Street
 Westfield, NJ 07090
 Tel: 908-735-1100
 Fax: 908-735-1101
 www.ferrisprospects.com

NO. SHEETS	10
SHEET NO.	10
DATE	08/11/11
PROJECT	FERRIS PROSPECT DEVELOPMENT, LLC
LOCATION	112 Ferris Place, 201 Prospect Street, Westfield, NJ 07090
SCALE	1/8" = 1'-0"
DESIGNED BY	ARCHITECTS
CHECKED BY	ARCHITECTS
APPROVED BY	ARCHITECTS
DATE	08/11/11

4TH FLOOR PLAN A5
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**Marchetto
Higgins
Stieve**
Architects
1225 West 10th Avenue
Westfield, NJ 07090
Tel: 908.261.1234
Fax: 908.261.1235
www.mhstev.com

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DEVELOPMENT, LLC**
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Westfield, NJ 07090
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Fax: 908.261.1235
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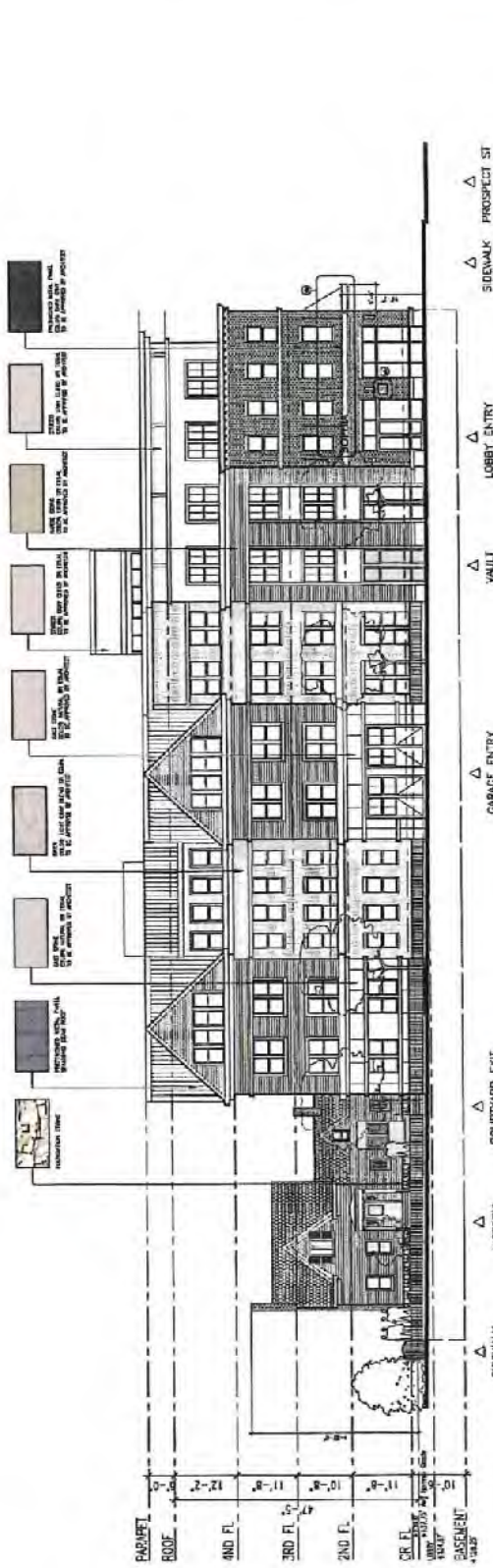
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Fax: 908.261.1235
www.ferrisprospects.com

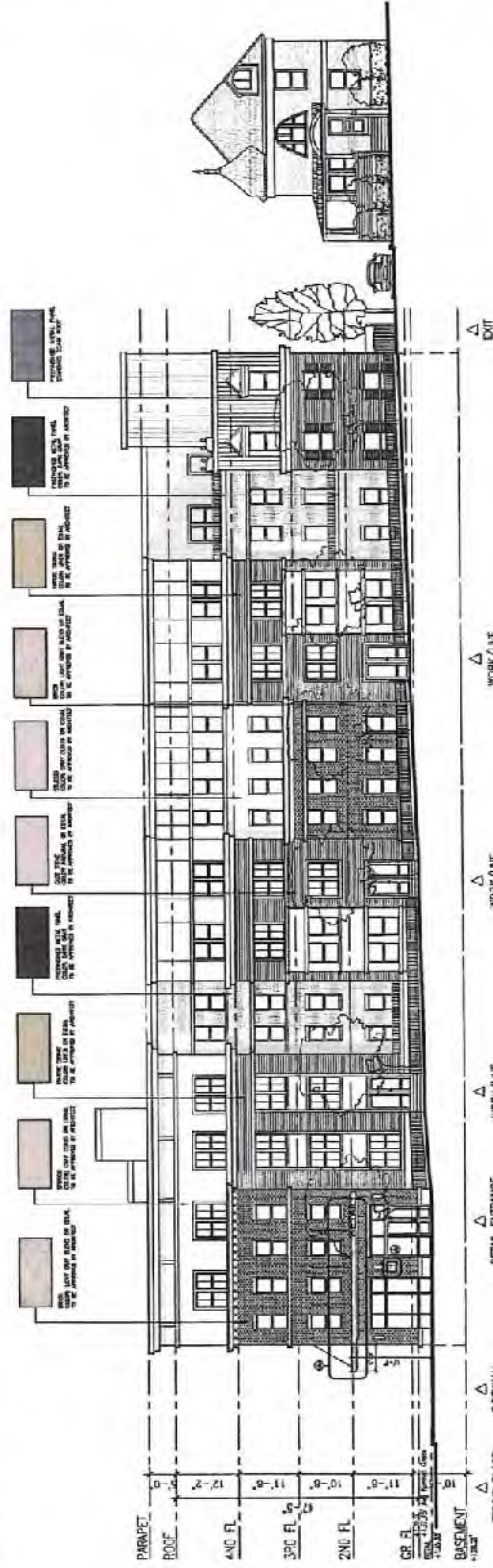
**FERRIS PROSPECT
DEVELOPMENT, LLC**
112 Ferris Place
201 Prospect Street
215 Prospect Street
Westfield, NJ 07090
Tel: 908.261.1234
Fax: 908.261.1235
www.ferrisprospects.com

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Fax: 908.261.1235
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2 FERRIS STREET ELEVATION
SCALE: 1/8" = 1'-0"



1 PROSPECT STREET ELEVATION
SCALE: 1/8" = 1'-0"

Marchetto Higgins Stone
ARCHITECTS
112 FERRIS PLACE
WESTFIELD, NJ 07090
TEL: 908.231.1111
WWW.MARCHETTOHIGGINSSTONE.COM

FERRIS PROSPECT DEVELOPMENT, LLC
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WESTFIELD, NJ 07090
TEL: 908.231.1111
WWW.FERRISPROSPECTDEVELOPMENT.COM

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112 FERRIS PLACE
WESTFIELD, NJ 07090
TEL: 908.231.1111
WWW.FERRISPROSPECTDEVELOPMENT.COM

NO.	DATE	DESCRIPTION
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BUILDING ELEVATION A7
Copyright © 2010 Marchetto Higgins Stone, All Rights Reserved

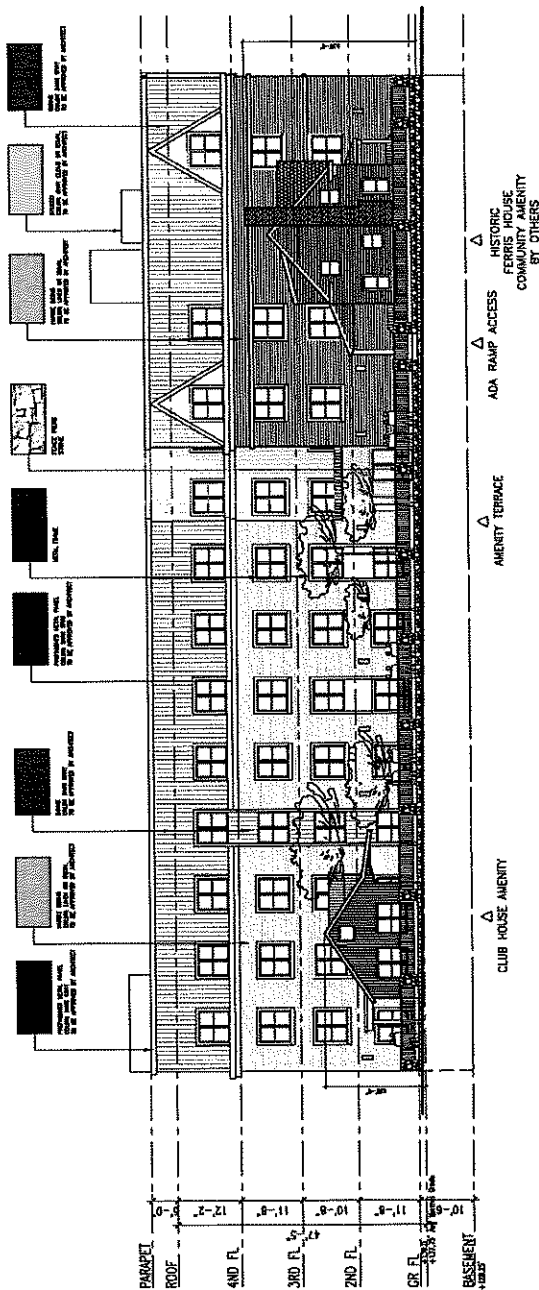
1. *Phragmites australis* (Cav.) Trin. ex Steud.

PHYSICAL DATA
DIAMETER 3"
LENGTH 4"
WEIGHT 45 G. MOUNTED 5 FT ABOVE FINISHED GRADE
WIND SPEED 2.7 LB
NOTES: 1. THIS PRODUCT IS NOT SUITABLE FOR WET LOCATIONS
2. THIS PRODUCT IS NOT IMPACT RESISTANT/VANDAL RESISTANT
3. COLOR SELECTION BY ARCHITECT

NOTE:
DECORATIVE LIGHT FIXTURE WILL BE
SHIELDED AS NEEDED TO LIMIT SPREAD
TO ADJACENT PROPERTY

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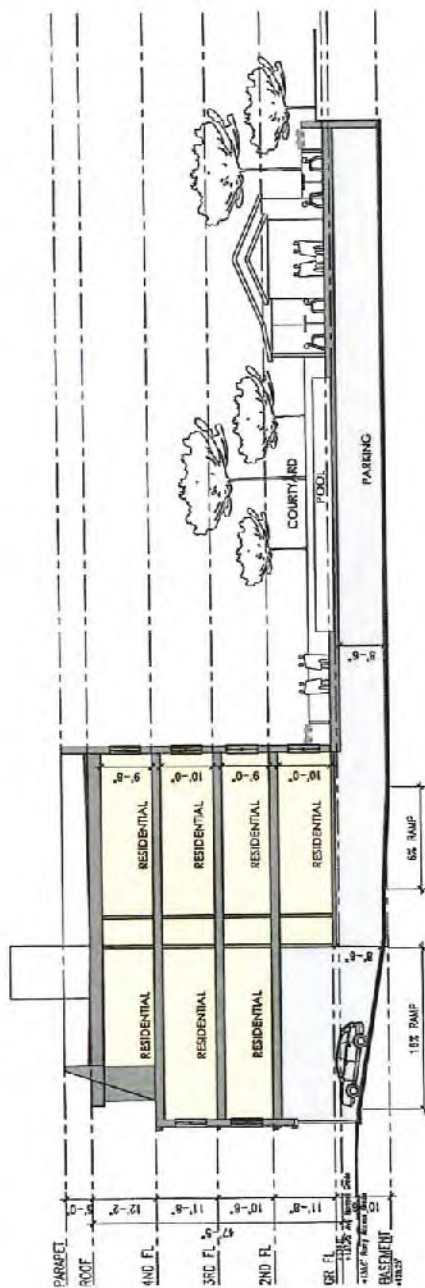
APPLICANT:
**THERRIS PROSPECT
DEVELOPMENT, LLC**
12 Ferris Place
#01 Prospect Street
#15 Prospect Street
Westfield, NJ 07090

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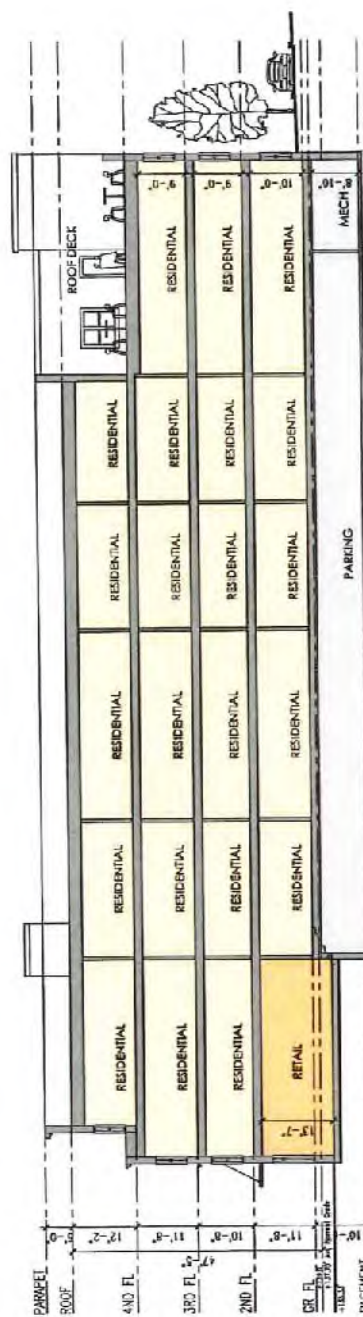
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SCALE: 3/32" = 1'-0"



1 NORTHWEST REAR ELEVATION
SCALE: 3/32" = 1'-0"



2 SCHEMATIC BUILDING SECTION
SCALE: 3/16" = 1'-0"



1 SCHEMATIC BUILDING SECTION
SCALE: 1/32" = 1'-0"

[illegible]

1225 Walnut Avenue

1-800-368-5828

101-795-6171

1995-1997

Applicant: _____

Applicant:
**FERRIS PROSPECT
DEVELOPMENT, LLC**

112 Ferris Place

201 Prospect Street
215 Prospect Street

Westfield, NJ 07090

Dwarf.
SERPIS PROSPECT

DEVELOPMENT, LLC

112 Ferris Place
301 Prospect Street

215 Prospect Street

Westfield, NJ 07090

 No Smoking Sign

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Trade /	Page 1
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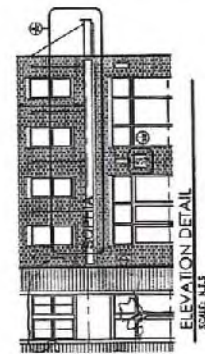
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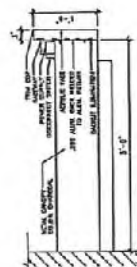
SCHEMATIC

BLDG SECTIONS

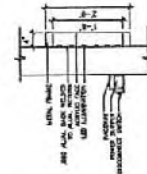
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ELEVATION DETAIL
SCALE 1/8" = 1'-0"



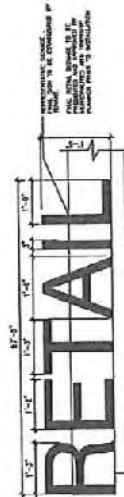
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SCALE 3/4" = 1'-0"



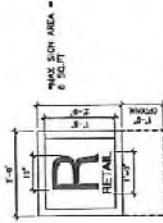
1 SIGN DETAIL AT LOBBY ENTRANCE
SCALE 3/4" = 1'-0"



ELEVATION DETAIL
SCALE 1/8" = 1'-0"



4 SIGN DETAIL AT CANOPY
SCALE 3/4" = 1'-0"



3 SIGN DETAIL AT RETAIL ENTRANCE
SCALE 3/4" = 1'-0"

Marchetto
Higgins
Stieve
Associates
1111 West 17th Street
Westfield, NJ 07090
Tel: 908.233.1111
Fax: 908.233.1112
www.mhst.com

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www.mhst.com

Architect:
FERRIS PROSPECT
DEVELOPMENT, LLC
112 Ferie Place
201 Prospect Street
215 Prospect Street
Westfield, NJ 07090
Owner:
FERRIS PROSPECT
DEVELOPMENT, LLC
112 Ferie Place
201 Prospect Street
215 Prospect Street
Westfield, NJ 07090

Scale: 1/8" = 1'-0"
Date: 01/11/11
Drawn By: [Signature]

NO.	DATE	DESCRIPTION
1	01/11/11	FOR SUBMITTAL TO TOWNSHIP
2	01/11/11	FOR SUBMITTAL TO TOWNSHIP
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SIGNAGE PLAN A10

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EXHIBIT B

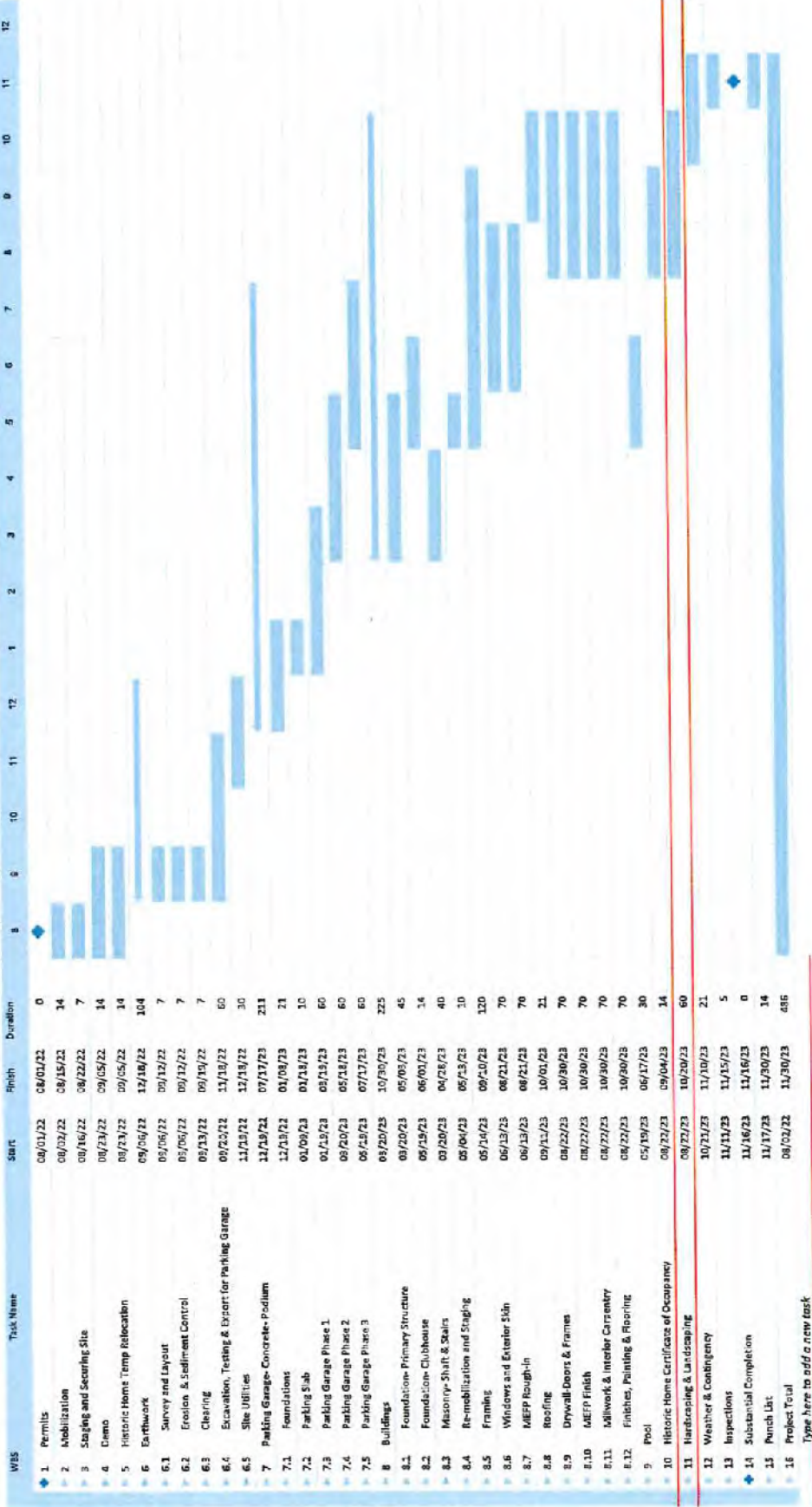
Construction Schedule

The Sophia

Project Lead: Rich Lutz

2022

2023



Type here to add a new task

EXHIBIT C

Form of Declaration of Covenants and Restrictions

Record and Return to:

Steven G. Mlenak, Esq.
Greenbaum, Rowe, Smith & Davis LLP
75 Livingston Avenue, Suite 301
Roseland, New Jersey 07068

DECLARATION OF COVENANTS AND RESTRICTIONS

Block 2504, Lots 12, 13, and 14
Town of Westfield, County of Union

This Declaration of Covenants and Restrictions ("**Declaration**") is made this ____ day of May, 2022 by **FERRIS PROSPECT DEVELOPMENT LLC**, with offices at 201 Prospect Street, Westfield, New Jersey 07090 (together with its permitted successors or assigns, "**Redeveloper**").

RECITALS

A. The Local Redevelopment and Housing Law, *N.J.S.A. 40A:12A-1, et seq.*, as amended and supplemented (the "**Redevelopment Law**"), provides a process for municipalities to participate in the redevelopment and improvement of areas designated by the municipality as being in need of redevelopment.

B. Pursuant to the Redevelopment Law, on October 13, 2020, the Mayor and Council of the Town (the "**Governing Body**") adopted Resolution Number 225-2020, declaring that the entirety of the Town met the statutory criteria for designation as an area in need of rehabilitation and designating all parcels within the Town as an area in need of rehabilitation (the "**Rehabilitation Area**").

C. Included within the Rehabilitation Area are Block 2504, Lots 12, 13, and 14, as shown on the official tax maps of the Town, known commonly as 201 Prospect Street (Lots 12 and 13) and 112 Ferris Place (Lot 14) (collectively, the "**Project Area**").

D. An 18th century historic home known as the "Mills-Ferris-Pearsall House" is currently situated upon Block 2504, Lot 14 (the "**Historic Home**").

E. The Town retained the professional planning services of Topology which has prepared a redevelopment plan for the Project Area dated November 17, 2021, entitled the "*Prospect + Ferris Redevelopment Plan*," a copy of which is on file with the Town Clerk (the "**Redevelopment Plan**").

F. On December 7, 2021, following a review of consistency by the Town's Planning Board ("**Planning Board**"), the Governing Body adopted General Ordinance No. 2231, approving and adopting the Redevelopment Plan for the Project Area.

G. Redeveloper is the owner of the properties comprising the Project Area.

H. Redeveloper proposes to remediate, develop, finance, construct, implement, and cohesively redevelop the Project Area into a mixed-use residential development consisting of a maximum 60 rental residential dwelling units (of which no less than 15% must be deed restricted as affordable income housing units), 1,000 square feet of retail or café space, and relocation and conversion of the Historic Home into an educational and cultural amenity, with 96 off-street parking spaces and associated improvements, as further described herein (the "**Project**").

I. Redeveloper proposes to complete the Project in accordance with the conceptual architectural floor plans, elevations and renderings entitled "*The Sophia - Westfield*" prepared by Marchetto Higgins Stieve, dated March 1, 2022, revised through May 13, 2022, the "Specific Parameters for Streetscape Improvements" (as referenced in the Redevelopment Plan) entitled "Streetscape Rendering Exhibit" prepared by Stonefield Engineering & Design dated May 13, 2022, and survey prepared by EKA Associates, P.A., dated September 15, 2021, collectively attached hereto as Exhibit A (together, the "**Concept Plans**").

J. The Town has determined that the Redeveloper possesses the proper qualifications and experience to implement and complete the Project in accordance with the Redevelopment Plan, and all other Applicable Laws (as such term is hereinafter defined), ordinances and regulations.

K. In order to effectuate the Redevelopment Plan, the Project, and the redevelopment of the Project Area, the Town has determined to enter into this Redevelopment Agreement with the Redeveloper, which Redevelopment Agreement designates Redeveloper as the "redeveloper" of the Project Area as the term "redeveloper" is defined in the Redevelopment Law and specifies the respective rights and responsibilities of the Town and the Redeveloper with respect to the Project.

L. N.J.S.A. 40A:12A-9(a) of the Redevelopment Law requires that all agreements, leases, deeds and other instruments between a municipality and a redeveloper shall contain a covenant running with the land requiring, among other things, that ". . . the owner shall construct only the uses established in the current redevelopment plan . . .".

M. The Redevelopment Agreement contains such a covenant by the Redeveloper and its successor or assigns for as long as the Redevelopment Agreement remains in effect, as well as a perpetual covenant by the Redeveloper and its successor or assigns not to unlawfully discriminate upon the basis of age, race color creed, religion, ancestry, national origin, sex or familial status in the sale, lease, rental, use or occupancy of the Redevelopment Area or any building or structures erected thereon.

N. The Redevelopment Agreement also provides that the Project Area, the Redevelopment Agreement, and Redeveloper's interest therein shall not be transferable, subject to certain conditions, prior to the issuance of a Certificate of Completion and further provides certain remedies to the Town for violations of the covenants and defaults under the Redevelopment Agreement.

O. The Redevelopment Agreement requires that such covenants be memorialized in a Declaration of Covenants and Restrictions and said declaration be recorded in the Union County Clerk's Office.

NOW THEREFORE, in consideration of the foregoing and in compliance with the requirements of the Redevelopment Agreement, Redeveloper, as owner of the Project Area, hereby declares as follows:

1. Defined terms not otherwise defined herein shall have the meaning assigned to such terms in the Redevelopment Agreement.

2. Redeveloper covenants and agrees that:

(a) Redeveloper shall develop, finance, construct, operate and maintain the Project on the Project Area in accordance with Applicable Laws, Government Approvals, the Redevelopment Plan, and the Redevelopment Agreement including the obligation to use commercially reasonable efforts to meet all deadlines and timeframes set forth in the Redevelopment Agreement.

(b) Redeveloper shall not make a Transfer without the written consent of the Town, which shall not be unreasonably withheld, conditioned, or delayed, except with respect to a Permitted Transfer.

(c) Redeveloper shall, in connection with its use or occupancy of the Project, not effect or execute any covenant, agreement, lease, conveyance or other instrument whereby the Project Area is restricted upon the basis of age, race, color, creed, religion, ancestry, national origin, sexual orientation, sex or familial status, and Redeveloper and their successors and assigns shall comply with all Applicable Laws prohibiting discrimination or segregation by reason of age, race, color, creed, religion, ancestry, national origin, sexual orientation, sex or familial status.

(d) Redeveloper shall, upon Completion of Construction, obtain all Certificates of Occupancy required authorizing the occupancy and uses of the Project Area for the purposes contemplated in the Redevelopment Agreement.

(e) Redeveloper shall cause the Project to be developed, financed, constructed, operated, and maintained at its sole cost and expense.

(f) Redeveloper shall not encumber, hypothecate, or otherwise use the Project Area, or any part thereof as collateral for any transaction unrelated to the Project.

(g) Redeveloper shall promptly pay the Town Costs and all taxes, service charges or similar obligations when owed to the Town with respect to the Project Area.

(h) Prior to, and as a condition of, applying for a Certificate of Occupancy of the mixed-use building proposed on the Project, the Redeveloper shall protect and completely restore the Historic Home in strict conformance with the Protection Plan, an outline of which is attached to the Redevelopment Agreement as Exhibit H. The final Protection Plan shall be vetted and approved by the Town and its professionals and formally approved prior to issuance of Building Permits. Construction of the Project shall take all steps necessary to protect and preserve the Historic Home from damage or loss in accordance with the Protection Plan. The Redeveloper shall secure a Certificate of Occupancy for the Historic Home within thirty (30) days of receipt of the Certificate of Occupancy for the mixed-use building. The Historic Home shall be always maintained in good and habitable condition. The provisions of this Section shall survive beyond issuance of a Certificate of Completion or termination of this Agreement

(i) Prior to applying for Building Permits, Redeveloper shall negotiate and execute an agreement for a period of no less than ten (10) years with at least one (1) local and reputable non-profit or governmental organization experienced with providing programming in historic structures such as the Historic Home, and/or the Town, to plan for and provide programming of cultural and educational events in the Historic Home. Such agreement shall authorize the non-profit to utilize the Historic Home on a regular basis for cultural and/or education events on reasonable terms satisfactory to the Town and the Town's Redevelopment Counsel prior to execution. In addition to the programming to be offered by the non-profit organization, the Redeveloper shall cause to reuse the Historic Home in accordance with the Historic Reuse Plan attached to the Redevelopment Agreement as Exhibit I and on file with the Town Clerk. The provisions of this Section shall survive beyond issuance of a Certificate of Completion or termination of this Agreement.

3. It is intended and agreed that the covenants and restrictions set forth in Section 2 shall be covenants running with the land. All covenants in Section 2, in any event, and without regard to technical classification or designation, legal or otherwise, and except only as otherwise specifically provided in this Redevelopment Agreement, shall be binding, to the fullest extent permitted by law and equity, for the benefit and in favor of, and enforceable by the Town and its successors and assigns, and any successor in interest to the Project Area, or any part thereof, against the Redeveloper, their successors and assigns and every successor in interest therein, and any party in possession or occupancy of the Project Area or any part thereof. The agreements and covenants set forth in Section 2 shall cease and terminate as to the Project automatically and without further action upon the issuance of a Certificate of Completion except for those covenants which survive in accordance with the terms of the Declaration. Upon the request of Redeveloper or any successor owner at any time after the issuance of a Certificate of Completion for the Project, the Town shall execute and deliver a discharge of the Declaration of Covenants and Restrictions in recordable form for the Project. Notwithstanding the foregoing, the agreements and covenants set forth in this Declaration shall cease and terminate upon the issuance of a Certificate of Completion for the Project, provided however, that the covenant set forth in Sections 2(c), 2(h), and 2(i) of this Declaration shall remain in effect without limitation as to time.

4. In amplification, and not in restriction of the provisions of Section 3, it is intended and agreed that the Town and its successors and assigns shall be deemed beneficiaries of the restrictions and covenants set forth in Section 2 both for and in their own right but also for the purposes of protecting the interests of the community and other parties, public or private, in whose favor or for whose benefit such agreements and covenants shall run in favor of the Town for the entire period during which such agreements and covenants shall be in force and effect, without regard to whether the Town has at any time been, remains, or is an owner of any land or interest therein to or in favor of which such agreements and covenants relate.

IN WITNESS WHEREOF, the Redeveloper has executed this Declaration effective as of the date first above written.

~Signature Page to Follow~

Witness:

FERRIS PROSPECT DEVELOPMENT LLC

Name:

Title:

By:

Name: James Ward

Title: Principal

ACKNOWLEDGMENT

STATE OF NEW JERSEY :

: ss

COUNTY OF UNION :

BE IT REMEMBERED, that on this ____ day of May, 2022, before me personally appeared **JAMES WARD** who being by me duly sworn on his oath, deposes and makes proof to my satisfaction that he is the designated authorized signatory of **FERRIS PROSPECT DEVELOPMENT LLC**, the entity named in the within Instrument; that the execution, as well as the making of this Instrument, have been duly authorized by the entity and said Instrument was signed and delivered by said designated authorized signatory as and for the voluntary act and deed of said entity.

Notary Public

EXHIBIT D

Existing Members

James Ward

EXHIBIT E

Parking Plan

STONEFIELD

May 13, 2022

Westfield Planning Board
Westfield Town Hall
425 East Broad Street
Westfield, NJ 07090

**RE: Parking Memorandum
The Sophia
Town of Westfield
Union County, New Jersey
SE&D Job No. PRI-210151**

Dear Board Members:

Stonefield Engineering and Design, LLC ("Stonefield") has prepared this Memorandum to outline the intended parking plan for the proposed mixed-use development, known as The Sophia. The subject property is located in the southwesterly quadrant of the intersection of Prospect Street and Ferris Place in the Township of Westfield, Union County, New Jersey. Under the proposed development program, a four (4)-story mixed-use development, consisting of 60 residential units and 500 square feet of first-floor retail space, would be constructed. The proposed four (4)-story mixed-use building with a basement-level parking garage would be located in the center portion of the property. The site would provide 96 parking spaces and one (1) on-street loading zone. The 500 square-feet of retail space would be located in the easterly portion of the site with access along Prospect Street.

Parking Supply

The proposed development would provide 96 parking spaces within the parking garage, inclusive of 29 compact spaces, 15 electric vehicle make-ready spaces, and four (4) ADA accessible parking spaces. Access to the parking garage would be provided along Ferris Place to minimize conflict with pedestrian circulation. Additionally, the proposed development would provide bicycle rack storage for 64 bicycles located within the parking garage. One (1) on-street loading zone would be provided along the northerly side of Ferris Place.

Parking Demand

To assess the parking demand, the parking requirements outlined in the Prospect + Ferris Redevelopment Plan were referenced. **Table 1** presents each site component and the parking requirement used to determine the parking demand.

TABLE 1 – PARKING DEMAND PER REDEVELOPMENT PLAN PARKING RATIOS

Use Component	Size	Parking Ratio	Parking Demand
Retail	500 SF	0 spaces for retail spaces less than 1,000 SF	0
Residential	60 Units	1.5 spaces per unit	90
Total			90

As shown in Table 1, the proposed development is able to satisfy the Redevelopment Plan requirements for the parking demand without the use of on-street parking.

STONEFIELDENG.COM

92 PARK AVENUE, RUTHERFORD, NJ 07070 201.340.4468 T. 201.340.4472 F.

STONEFIELD

As per P.L. 2021, c.171 (C.40:55D-66.18 et al.), all projects involving multifamily dwellings with more than five (5) units must have 15% of the parking supply be pre-wired for electric vehicle charging stations ("make-ready"). For the proposed parking supply of 96 parking spaces, this equates to 15 make-ready spaces. The electric vehicle requirements consider electric vehicle spaces as a minimum of two (2) parking spaces for the purpose of satisfying parking requirements, up to a 10% reduction of total requirement. As such, the development plan would be considered to provide 105 (96 + 9) total parking spaces, whereas 90 are required.

Additionally, the Prospect + Ferris Redevelopment Plan requires one (1) bicycle parking space per residential unit. For the proposed 60-unit development, this equates to 60 bicycle parking spaces. The proposed development would provide bicycle rack storage for 64 bicycles located in the westerly portion of the parking garage, which meets the bicycle parking requirement. The bicycle storage would be separated from automobile parking areas by a physical barrier. In accordance with the Redevelopment Plan, one (1) on-street loading zone with bump out would be provided along the northerly side of Ferris Place near the intersection of Prospect Street and Ferris Place.

Parking Plan

The applicant intends to reserve a maximum of one (1) parking space per unit for residential use. The remaining parking spaces would not be reserved. The site's proximity to Downtown Westfield's services and retail shops, NJ Transit bus stops, and the Westfield Train Station suggests that the site's location can support resident transportation needs without a private vehicle. The addition of the bump out near the intersection of Prospect Street and Ferris Place along with new streetscape would enhance the non-vehicular (pedestrian, bicyclist) experience. Access to the parking garage would be gate restricted. All residents would use key fobs or license plate technology to enter the building. The applicant anticipates visitors to be buzzed into the building by residents.

The one (1) on-street loading zone along the northerly side of Ferris Place would be utilized by rideshare options, Wonder Truck, Amazon, and other vehicles to easily access the subject site without the need to double park along Ferris Place. The applicant intends to have all move-ins and move-outs be scheduled by ownership, with no more than one (1) morning and one (1) evening move-in or move-out permitted. Additionally, the applicant intends to place a limit on truck size.

Conclusions

This report was prepared to outline the intended parking plan for The Sophia development. As outlined in the parking demand analysis, it is anticipated that the proposed parking supply would sufficiently support the development without the use of on-street parking.

Please do not hesitate to contact our office if there are any questions.

Best regards,



Matthew Seckler, PE, PP, PTOE

Stonefield Engineering and Design, LLC

- (67) PARKING SPACES
- (68) CONTACT SPACES 302
- (69) HANDICAP SPACES WITH 24
- (70) PUBLIC PARKING SPACES 10/04

(15) TOTAL TO BE USED
TO COMPLY WITH THE SECTION 1702(d) LAND USE
STANDARD A 100-140-001/40 MAP OUTLINE ON A
SCHEDULED DRAFT MAY BE PROVIDED FOR FUTURE
FUTURE MAPSING REGULATION OF A LEVEL 2
COURT, COUNCIL, TO BE MAINTAINED

[illegible]

Marchetto Higgins-Streve
Architects
P.C.
10000 Wilshire Blvd., Suite 200
Beverly Hills, CA 90210
Tel: 310/276-1100
Fax: 310/276-1101
Web: <http://www.mh-s.com>

3225 Wilson Avenue
Indianapolis, IN 46218
304-794-1502 w
304-793-8178 f
64114.org/~hmc/040404

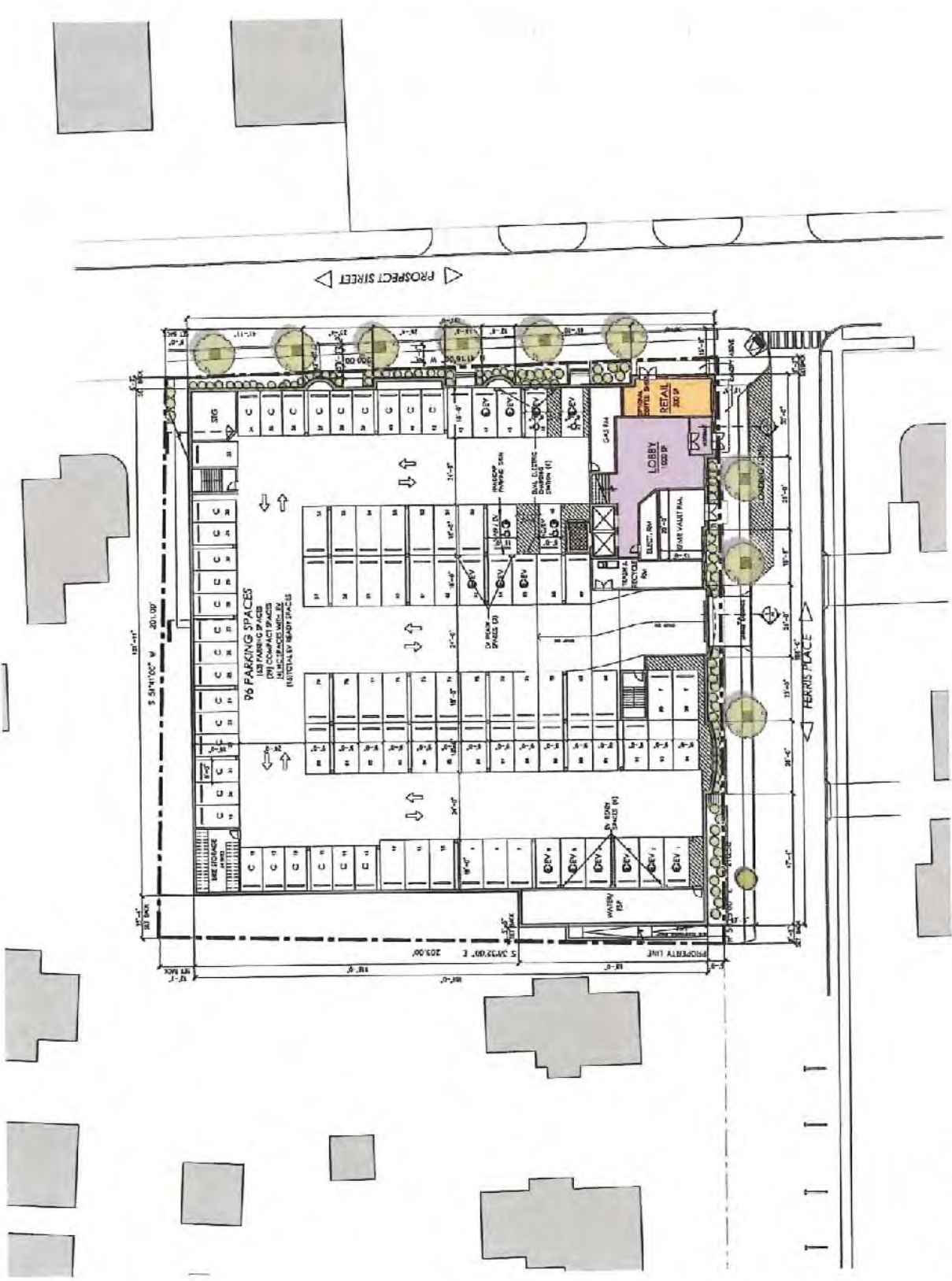
Applicant:
THE SOPHIA
201 Prospect Street
Westfield, NJ 07090

Direct:
201 Prospect St
Joint Venture, LLC,
201 Prospect Street
Westfield, NJ 07090

[illegible]

BASEMENT PLAN **A1**

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.



1 BASEMENT PLAN
SCALE 1/8" = 1'-0"

EXHIBIT F

Form of Certificate of Completion

Record and Return to:

Steven G. Mlenak, Esq.
Greenbaum, Rowe, Smith & Davis LLP
75 Livingston Avenue, Suite 301
Roseland, New Jersey 07068

CERTIFICATE OF COMPLETION

Dated: _____

Project: The Project (the "**Project**") as described in that certain Redevelopment Agreement by and between the Town of Westfield (the "**Town**") and Ferris Prospect Development LLC ("**Redeveloper**") dated _____ (the "**Redevelopment Agreement**")

Location: Block 2504, Lots 12, 13, and 14, Town of Westfield, County of Union (the "**Property**")

Pursuant to Section 4.5(b) of the Redevelopment Agreement, the undersigned, an authorized representative of the Town, certifies as of the date hereof as follows (all undefined terms used herein shall have the same meaning ascribed to them in the Agreement):

- (i) the Project in its entirety has been completed, acquired and/or installed as of _____, in accordance with the Agreement, the Redevelopment Plan, the Planning Board Approvals, the Governmental Approvals and other Applicable Laws so that the Project in its entirety may, in all material respects, be used and operated under the applicable provisions of the Agreement;
- (ii) all permits, licenses and approvals that are required in order for Redeveloper to Complete the Project or such other work or action to which such term is applied are, to the extent so required, in full force and effect;
- (iii) the Project is being operated in accordance with the terms and provisions of the Agreement, the Redevelopment Plan, the Planning Board Approvals, the Governmental Approvals and Applicable Laws; and
- (iv) a copy of the Certificate of Occupancy issued with respect to the Project is attached hereto as Schedule A.

This Certificate of Completion for the Project constitutes the Town's conclusive determination that Redeveloper have fully satisfied the agreements and covenants in the Agreement, which agreements and covenants are hereby terminated and that the conditions determined to exist at the time the Project Area was determined to be an area in need of redevelopment are deemed to no longer exist. The land and improvements constituting the Project Area are no longer subject to any covenant running with the land covered by this Certificate of

Completion, except as set forth below.

The recording of this Certificate of Completion shall terminate all covenants and restrictions set forth in a certain Declaration of Covenants and Restrictions, dated _____, 20____ and recorded on _____ in Book _____ Page _____ in the office of the Union County Clerk, except for those portions of the Declaration of Covenants and Restrictions that expressly survive termination thereof.

Except as set forth in the Agreement, this Certificate of Completion is given without prejudice to any rights of the Town or the Redeveloper against third parties which exist on the date hereof or which may subsequently come into being.

Attest:

TOWN OF WESTFIELD

Name:
Title:

By:

Mayor Shelley Brindle

STATE OF NEW JERSEY :

: ss

COUNTY OF UNION :

BE IT REMEMBERED, that on this _____ day of _____, 2022, before me personally appeared **Mayor Shelley Brindle** who being by me duly sworn on her oath, deposes and makes proof to my satisfaction that she is the designated authorized signatory of the **TOWN OF WESTFIELD**, the entity named in the within Instrument; that the execution, as well as the making of this Instrument, have been duly authorized by the entity and said Instrument was signed and delivered by said designated authorized signatory as and for the voluntary act and deed of said entity.

Notary Public

SCHEDULE A

Certificate of Occupancy

EXHIBIT G

List of Green Building Elements

Marchetto Higgins Stieve

Architecture Planning Urban Design

1225 Willow Avenue
Hoboken, NJ 07030
201.795.1505

Dean Marchetto, FAIA
Founding Principal

Michael Higgins, AIA
Principal

Bruce Stieve, AIA
Principal

Michael Buldo, AIA
Principal

Green Building Features

Building Construction:

- Recycled Materials
 - (a) Recycled demolition materials
 - (b) Construction and finish material content
- Local Materials - Locally sourced construction materials
- Low VOC Paints and Finishes:
- Reduce heat island effect - High Albedo White Roof and Light color materials
- Building envelope and insulation to meet Energy Star standards.
- Windows and doors to meet Energy Star standards.
- All HVAC Equipment and ductwork to meet Energy Star standards
- All Appliances to meet Energy Star standards.
- LED Lighting throughout building.
- Lighting Control Systems Smart App and Motion Activation
- Low Flow Plumbing Fixtures
- Programmable Thermostats
- Dryers and Dryer Vents to meet Energy Star standards

Site:

- Location -Access to Trains and transit
- Bikes storage facilities and secure on street bike racks
- Electric Vehicle charging stations to meet Government Standards
- Compact building /Density
- Indigenous / draught tolerant plants
- Light Pollution dark sky compliant fixtures.
- Storm Water controls.
- Green Roof
- Building Re-use - Historic Home relocation
- Rain Water Harvesting

Culture:

- Robust recycling protocols
- Composting
- No Smoking Building
- Pet Friendly Building
- Low impact cleaning and maintenance
- Smart Apps Phone controls of apartment features
- Community bikes



EXHIBIT H

Historic Protection Plan

CONSTRUCTION PROTECTION PLAN REPORT

for

THE FERRIS HOUSE

at

112 FERRIS PLACE, WESTFIELD, NJ

Prepared for:

FERRIS PROSPECT DEVELOPMENT, LLC

112 Ferris Pl

Westfield, NJ 07090

Prepared by:

USA ARCHITECTS, PLANNERS + INTERIOR DESIGNERS, LTD

100 W Oxford St, Suite E-1500

Philadelphia, PA 19122

USA PROJECT NO. 2022-056

May 6, 2022



TABLE OF CONTENTS

- I. Statement of Intentions
- II. Protection Plan Protocols
- III. Protection Plan Narrative
- IV. Documentation Photographs
- V. Appendix

I. STATEMENT OF INTENTIONS

The intent of a construction protection plan is to ensure that physical damage to existing historic properties adjacent to demolition and construction activities is prevented. Demolition and new construction can cause harm and damage to the physical integrity of a historic structure.

Specifically, this report will provide guidance on protecting the house while it is moved from the present location to the temporary (construction) location, and then to its final post-construction location. The house will remain on the same lot and the relocations are to allow construction of the new development of which this house will become part of (see attached site plan to temporary house location).

This protection plan scope of work is limited to the protection of the house during relocations only. The rehabilitation and restoration of the house will be covered under a separate plan to be developed after the house is moved to its final location.

The demolition work includes the removal of the existing non-historic addition on the rear of the house, prior to moving, and the protection of the "scar" area afterwards.

The team involved with this protection plan includes Ferris Prospect Development LLC (team lead), W.A. Building Movers and their subcontractors (GC), the Town of Westfield, NJ (historic designator of house), and USA Architects (historic consultant).

II. PROTECTION PLAN PROTOCOLS

The following are recommended broad protection measures with action descriptions:

1. **Communication** with pre-demolition and relocation meetings on-site to identify potential risks and historic fabric, negotiate changes and agree upon protective measures.

The developer (as project lead) will schedule the pre-demolition meeting and will include the GC, his house mover subcontractor, a representative of the Town, and the architect. At this meeting the GC shall provide a schedule for the demolition and relocations. Progress meetings will be held during relocations and after each relocation. It will be the GC's responsibility to issue meeting minutes.

2. **Documentation** of the existing condition of the historic building and significant historic fabric (including, but not limited to windows, stairs, masonry, cornice details) prior to demolition and relocation work.

This is included in this report

3. **Implementation** of protective measures at historic fabric adjacent to demolition and relocation activities.

This will be the responsibility of the GC and will be included in their scope of work.

4. **On-Site Monitoring** during relocations to identify damage, to evaluate the efficacy of protective measures already in place, and to explore and implement additional corrective steps.

Monitoring will be limited to site observations made by the team prior to each relocation (after demolition), with reports coordinated and issued as needed by the architect. All damage created by the relocations will be documented by the architect and compiled in a punch list for the GC to repair.

III. PROTECTION PLAN NARRATIVE

COMMUNICATION

Pre-demolition (the removal of the rear addition to the house) and pre-relocation meetings will occur to ensure that all trades are aware that the project involves significant historic material fabric that needs to be identified and protected.

DOCUMENTATION

A survey to document the existing condition of historic fabric has been completed prior to demolition and relocation work. The survey, included in this plan, includes photographic documentation with narratives. Survey highlights include:

1. Existing Windows (including hardware, sash, glazing, frame and sill. Interior and Exterior Conditions) – Except for the diamond and gable windows, it appears that all the windows are replacement type. Replacement windows can be retained during the relocations to protect the building interiors.
2. Shutters – Limited to the gable windows only and should be carefully removed and stored prior to relocations. No evidence was found of existing shutters on exterior windows.
3. Existing Doors (including hardware, glazing, frame, and threshold. Interior and Exterior Conditions) – Existing doors are limited to three exterior entrance locations and interior storage panel doors. The doors shall be retained to provide protection to the house interior.
4. Existing masonry walls – Limited to two brick chimneys and related decorative features to be retained. The existing basement walls are a mix of materials and are not included in the relocation.
5. Cornice Details – Existing cornices are a simple design with no details.
6. Historic Fabric and later construction to be demolished – See photo survey for rear addition to be removed. See below for proposed temporary infill protection.
7. Interior Historic Stairs and floors – The existing stair to the second floor will be retained and is in good condition. The existing floors have been covered with new planking throughout and further investigation is required to determine what is under finish flooring.
8. Roof Structure – The existing framing is original to the house and includes beams with peg joinery. The roof consists of steep pitch main roofs, prominent gables, and a shed dormer facing the rear, all considered character defining features.
9. Roofing – The original roofing appears to be no longer present and has been replaced

with modern 3-tab shingles.

10. Flooring – The majority of the finish flooring appears to be modern planks set on wood sub-flooring. Some sub-flooring is visible in one of the first-floor rooms. In the attic of the main section, however, there is wood flooring with wrought metal nails visible.
11. Exposed Framing – In various locations the roof, floor and wall framing is visible and consists of timber members with either wood or metal connections. There are modern additions visible to this framing which consists of dimensional lumber.

IMPLEMENTATION

General Protections:

1. The existing overgrown plantings around the house shall be carefully removed prior to demolition work so as not to damage existing clapboards, cornices, or trims.
2. Only hand tools or small power tools designed for sawing or grinding, not hammering, and chopping, to minimize vibration and disturbance of adjacent surfaces will be used.
3. Only hand tools will be used where material to be demolished is in direct contact with historic fabric and walls.
4. Cutting and drilling will occur from the exposed or finished side into concealed surfaces to avoid marring existing finished sides. Hand tools will be adjustable so as to penetrate or cut only the thickness of material being removed.
5. Materials demolished and removed from elevated locations will be handled so as not to damage historic fabric below. Debris will be removed along a route that avoids historic fabric and protective barriers will be installed where necessary. Materials, products, and equipment used for performing the demolition, and for transporting debris, materials, and products will be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inches or more. Floors and other surfaces along haul routes will be protected from damage, wear, and staining.
6. This job site is a NON-Smoking site. All persons within the Project work and staging areas and anywhere on the property are prohibited from smoking.
7. Existing work will be documented before each procedure (demolition & relocation) and progress during the work with digital preconstruction documentation photographs.
8. The existing storm water system (gutters & downspouts) should be retained to protect the exterior while it stays in the temporary, construction, location.
9. Monitoring and inspection (via visual observations) will occur to ensure damage to historic fabric has not occurred during the demolition and relocation process.

Roof Structure & Roofing:

1. The roof structure, specifically the visible structure in the attic, shall be maintained during the relocations. No removals or disassembly shall occur of this structure.
2. The existing roofing shall be considered a weather barrier for the entire building and retain as such during the relocations. Any leaks that occur during the relocations shall be immediately repaired and shall not change the appearance of the shingles.

Windows & Doors:

1. Pry bars over 18 inches long and hammers weighing over 2 lb are not permitted for dismantling work.
2. Windows to remain and be restored, and newly installed windows will be covered with plywood to avoid damage during the demolition and construction process.
3. Openings to be covered and secured prior to installation of new doors and windows.

Building Interior:

1. Historic floors will be covered and protected with plywood during the demolition and construction process.
2. Plywood covering will be placed on opening exposed to demolition or construction process.
3. We note that the existing fireplace mantels have been removed and are stored offsite in preparation for reinstallation.
4. We note that while there is evidence that doors were present in several locations, they have been removed, including hardware.
5. The existing timber framing visible from the interior shall be retained and protected during the relocations. No removals or disassembly of timber framing shall occur during relocations.

Protection From Fire:

1. The job site will be kept clean and clear of combustible materials including rubbish, paper, waste, and chemicals, except to the degree necessary for the immediate work.
2. A fire watch will be placed at locations where the work involves heat generating equipment or highly combustible materials. Fire extinguishers, fire blankets and rag buckets will be maintained suitable for the type of work being performed.
3. The job will be a non-smoking site.

Masonry Chimneys:

1. The house has two chimneys constructed of brick that are character defining features of the house. Both will be relocated with the house.
2. Careful separation from the existing foundation shall occur in preparation of the initial relocation.
3. Provide bracing and supports for the chimneys that will prevent movement in the brick that could cause cracking. The caps shall be covered and protected for the duration of the relocations.

Dust Control:

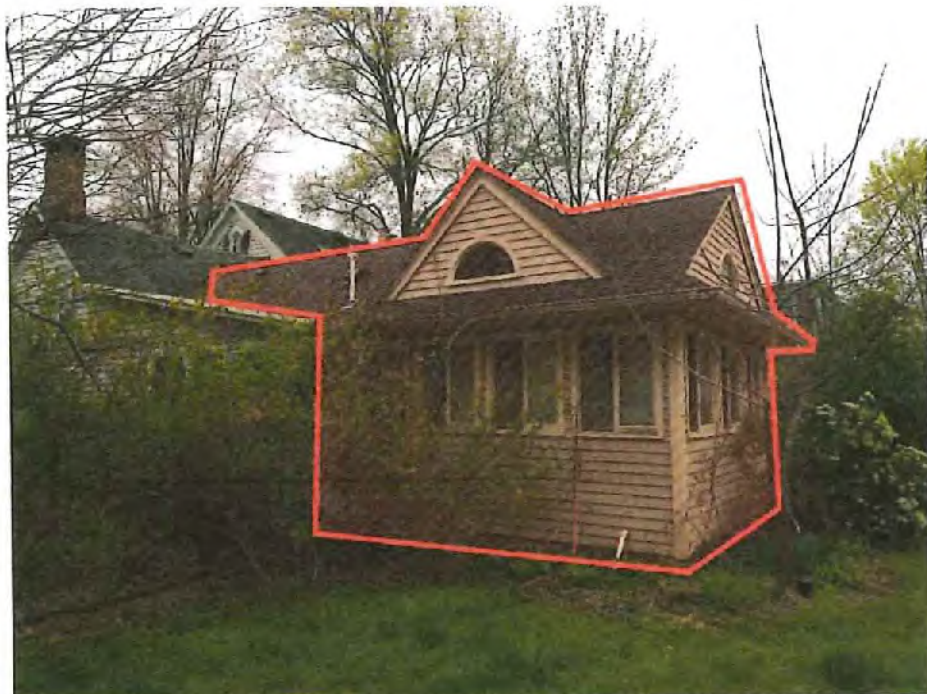
1. Adjacent historic fabric will be protected from damage caused by dust during demolition. Plastic or fabric dust partition will be installed as a containment from other areas during demolition.

Demolition and Scar Protection:

1. The removal of the non-contributing addition on the rear of the house will require remediation to the existing house for security and weather protection. See annotated photos below for scope of removals.
2. Care shall be taken with removal of addition so that no damage to existing house occurs during removals or carting away of debris. The over framed roof of the addition shall be carefully removed so that the existing house framing and sheathing is retained and not damaged.
3. The existing porch, railings, deck, ceiling to be retained shall be protected during removals.
4. The existing wall within the addition, the existing exterior wall of the house (see photo below), will be retained after demolition and become an exterior wall. The existing door will be sealed with plywood on exterior side. The exterior side of this wall will be exposed to the exterior and shall be protected with plywood sheathing and a weather resistant barrier. The assembly will be reviewed and approved at the pre-demolition meeting.
5. The removal area of the existing roof shall have a weather barrier installed to prevent water infiltration until the rehabilitations are activated. This assembly will be reviewed and approved at the pre-demolition meeting.



West Side of Addition- Extent of removals including roof over house



East Side of Addition- Note roof over existing house



Interior View of wall to be retained after demolition. Highlighted door to be infilled during relocations. Opposite side of wall will be on exterior after demolition.

V. APPENDIX

Site Plan with proposed temporary location of house.

The following tech notes from the National Park Service are included for reference only and relate to building protection during demolition and adjacent construction best practices:

National Park Service *Preservation Tech Note* "Temporary Protection Number 3, Protecting a Historic Structure During Adjacent Construction"

National Park Service *Preservation Tech Note* "Temporary Protection, Number 2. Specifying Temporary Protection of Historic Interiors During Construction and Repair."

IV. DOCUMENTATION PHOTOGRAPHS

The following survey photographs were taken on April 25, 2022, and include the exterior and interior of the house. The basement was excluded from the survey:



Overall view of house from Ferris Place



Main Façade Detail

Character defining features here include the gable window, shutters, both porches, porch railings, and porch benches



Overall View of Street Façade



Left, or West, Elevation

Character defining features here include the brick chimney with sloped shoulder, diamond window, and rear porch



West Elevation of Rear Porch



View of Non-Historic Rear Addition

Character defining features here include the shed dormer. The modern addition will be removed.



Detail View of Rear Elevation



View of Rear Porch

Character defining features here include the porch railings, lattice panels, exposed ceiling panels, and posts.



Rear Elevation with Porch



Rear Elevation of Addition

The rear addition is not a contributing element, is not original to the structure and will be removed.



Right, or East, View of Addition



Right View of Elevation

Character defining features here include the chimney, chimney cap, gable windows and covered entrance



Detail View of Front Elevation



Entrance Hall

Character defining features here include window casings, sills, and baseboards. Note the fireplace mantel is stored off site.



Main Living Room



Rear Room off Porch

Note that the radiators and wood covers are not original to the house



Front Entrance Hall



Secondary (Dining) Room

Most of the flooring appears to be a recent installation over either existing wood or subfloor. The existing hewn beam framing should be retained.



Dining Room Entrance



Dining Room Interior

Character defining features here include wood trims and the decorative panels below the windows



Living Room View

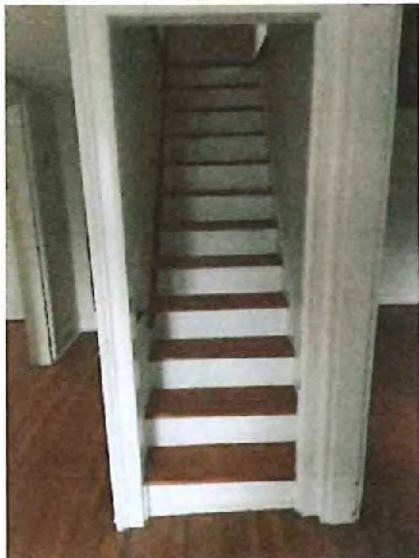


First Floor Bathroom

Both (one on each floor) bathrooms are not original to the building



Rear Entrance Door to Porch



Stair to Second Floor

Character defining features here include the stairs and wood panel storage doors



Attic Room



Attic Room
Character defining features here include wood trims



Second Floor Central Hall



Bedroom One
Radiators and surface mounted devices are not original to the building



Bedroom two



Bedroom Two
Character defining features here include the panel closet doors



Bedroom Three



Bedroom Three
Note the wood closet in bedroom three



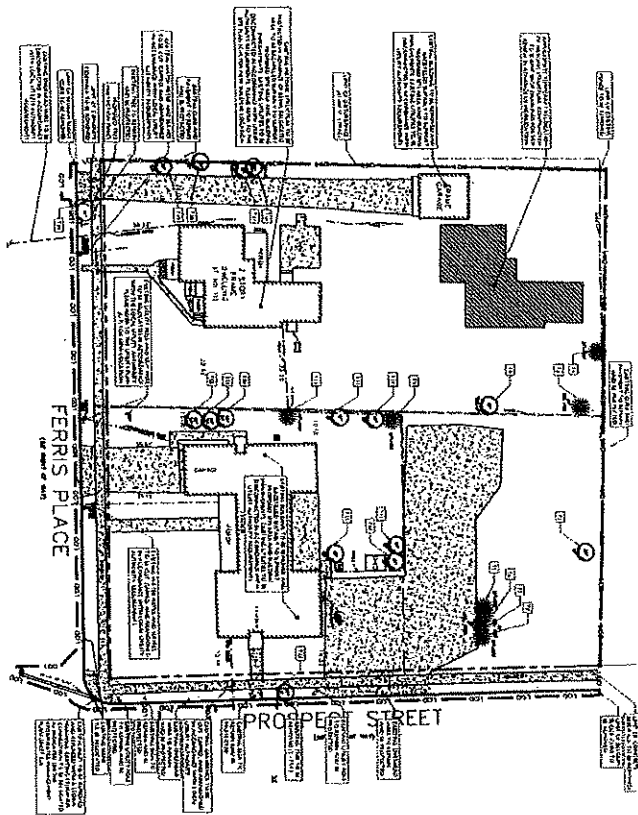
Bedroom Three



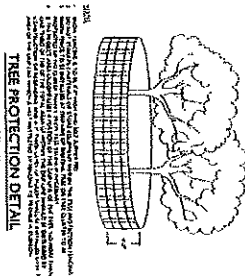
Main Central Hall
Note ladder to attic and wood guard at stairs down to first floor



Main Central Hall



SYMBOL	DESCRIPTION
(Symbol)	EXISTING BUILDING
(Symbol)	PROPOSED BUILDING
(Symbol)	EXISTING TREE
(Symbol)	PROPOSED TREE
(Symbol)	EXISTING DRIVEWAY
(Symbol)	PROPOSED DRIVEWAY
(Symbol)	EXISTING FENCE
(Symbol)	PROPOSED FENCE
(Symbol)	EXISTING UTILITY
(Symbol)	PROPOSED UTILITY
(Symbol)	EXISTING ROAD
(Symbol)	PROPOSED ROAD
(Symbol)	EXISTING LOT
(Symbol)	PROPOSED LOT

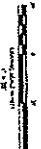


TREE PROTECTION DETAIL



ALL SITE FEATURES WITHIN THE LIMIT OF DISTURBANCE INDICATED ON THIS PLAN ARE TO BE REMOVED / DEMOLISHED UNLESS OTHERWISE NOTED. THE ENGINEER HAS CONDUCTED A VISUAL INSPECTION OF THE SITE AND HAS FOUND NO SIGNIFICANT DISCREPANCIES AMONG THE FIELD CONDITIONS AND THIS PLAN.

SYMBOL	DESCRIPTION
(Symbol)	EXISTING BUILDING
(Symbol)	PROPOSED BUILDING
(Symbol)	EXISTING TREE
(Symbol)	PROPOSED TREE
(Symbol)	EXISTING DRIVEWAY
(Symbol)	PROPOSED DRIVEWAY
(Symbol)	EXISTING FENCE
(Symbol)	PROPOSED FENCE
(Symbol)	EXISTING UTILITY
(Symbol)	PROPOSED UTILITY
(Symbol)	EXISTING ROAD
(Symbol)	PROPOSED ROAD
(Symbol)	EXISTING LOT
(Symbol)	PROPOSED LOT



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11 Spring Street, Putnam, NJ 07641
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THE SOPHIA
PROPOSED MIXED-USE DEVELOPMENT

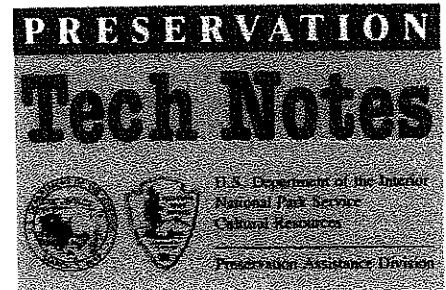
BLOCK 314, LOTS 13, 14, & 15
281 PROSPECT STREET
TOWN OF WESTFIELD
UNION COUNTY, NEW JERSEY

PRELIMINARY & FINAL MAJOR SITE PLAN

DATE: 07/12/2011
BY: [Signature]

DEMOLITION PLAN

C-3



TEMPORARY PROTECTION NUMBER 2

Specifying Temporary Protection of Historic Interiors During Construction and Repair

Dale H. Frens, AIA
Frens and Frens

PLANNING AND SPECIFYING TEMPORARY PROTECTION

Projects involving historic interiors range from the meticulous restoration of a National Historic Landmark residence as a museum to the insertion of modern apartment units in an abandoned loft building. The size of the building, significance of the interiors, and scope of work will determine how best to protect interior finishes, features, and collections during construction work. All work involving historic buildings, however, shares the need to properly plan for and specify appropriate temporary protection measures. Without such provisions, unnecessary damage can result which will require additional

funds to correct or which can lead to irreversible loss of historic fabric.

Problem

Relying on the contractor to protect interiors without specifying such protection puts historic material and finishes at unnecessary risk. Protective measures must be specified in the construction specifications for the job.

Although general contract language may make reference to "protecting existing construction" and may require that the contractor "restore any damage to its original condition at no additional cost to the

*Historic interiors and collections
should be protected from potential
damage during construction work*

owner" (or other similar language), in practice, the general nature of the language affords little *protection* to existing historic finishes or features. At best, such measures may provide a mechanism for repairing and paying for damage *after* it has occurred. Rather than provide adequate protection, some contractors deliberately elect to repair damage, believing it is cheaper.

Solution

The planning process includes three important goals: 1) protection of any collections where present; 2) fire protection; and, 3) protection of historic architectural features and finishes. Collections safety during construction applies to buildings in which collections are stored or displayed, including cases where there are historic furnishings that are not part of a formal collection. Construction operations pose a serious threat to collections, and it is nearly always desirable for the collection to be removed from the work area. While this may seem obvious, in practice, maintenance and repair activities often take place in spaces containing collections. Common examples of this include the installation of wiring for security systems, electrical upgrades, or telecommunications; repainting; and additional work undertaken after owner occupancy.

Except for the most minor repairs, as defined by the curator of collections for the institution or other responsible parties, collections should be moved out of the construction areas to a secured and safe location until *all* work has been completed. For small buildings where extensive work is taking place, the collection should be entirely moved off site to another location. This approach may also be desirable for larger buildings, depending upon the nature of the work, risks to collections, and availability of protected space on site.

Fire Protection

Fire poses the greatest risk of sudden catastrophic loss during construction activities in existing buildings. Just one of numerous examples is the 1985 Harrison Court fire in Philadelphia, in which a block-long National Register warehouse building undergoing rehabilitation burned to the ground (*see cover photo*). The fire was caused by sparks from cutting torches that were being used during selective interior demolition work.

To address the threat of loss of life and property during construction operations, the National Fire Protection Association (NFPA) publishes NFPA 241: *Safeguarding Building Construction and Demolition Operations*, most recently reissued in 1989¹. Although written to provide fire protection procedures for all types of building con-

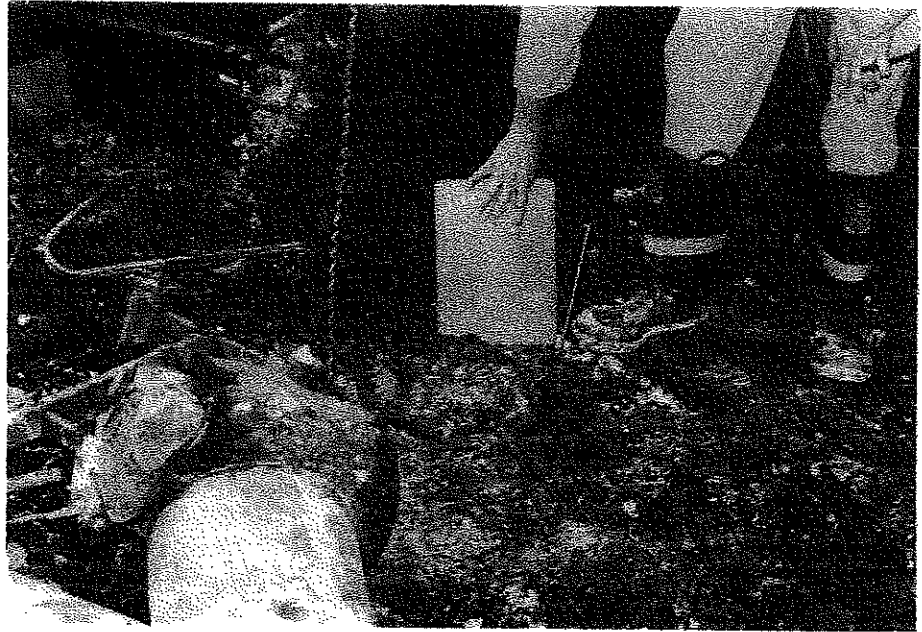


Figure 1. The spontaneous combustion of cloth rags that had been used in applying a common finishing wax caused over \$1 million damage to a historic government office building in 1991. Remains of the trash can where the rags had been stored overnight is indicated by the fireman's notepad. After the cause of the fire was determined, a standard specification provision was developed for future contracts requiring the contractor to remove all material contaminated with finishing products from the site at the end of the day.

struction activities, including new construction, NFPA 241 should be a reference standard in any selective demolition specification, and a foundation for addressing fire safety on building rehabilitation sites. Additional guidance is available in NFPA 914: *Rehabilitation and Adaptive Reuse of Historic Structures*. When these are utilized as reference standards, the historic building owner should obtain and enforce their recommendations (*see figure 1*).

The building owner and design professional should also review fire protection measures and fire fighting methods that are permitted by the standard but may be insensitive to the protection of historic finishes. Such measures and procedures should be clearly stated as "prohibited" in the specifications or construction agreement.

According to NFPA, 60% of the fire losses to buildings under construction were caused by the following: 1) portable heating equipment (25%); 2) cutting, welding, and plumbers' torches (20%); and, 3) matches and smoking (15%).

In addition to these three causes cited by NFPA, for historic buildings there is a fourth major cause—the use of heat devices to remove paint. They share a common characteristic: they are all caused by contractor operations on the site. For these reasons, full adherence to the project specifications is needed to reduce, or eliminate, these causes of fire.

Temporary Heat

During the normal operation of a building, the heating plant—boiler or warm air furnace—is placed at a remote location (usually in a fire-rated room); set in a stationary position; equipped with a fresh air supply and non-combustible exhaust flue; and supplied with fuel piped from a remote oil tank or by a natural gas pipe brought into the building. In the case of construction projects involving historic buildings, temporary heating devices are frequently utilized. These devices are inherently dangerous because they are portable and often unstable; have movable and nearby fuel tanks; and often exhaust into the space being heated.

Electric temporary heaters are considered the safest temporary heating devices, but require heavy conductors and power supplies which are not always available at desired locations when temporary heat is needed. As a result, these are generally not used. One alternative is a propane heater, which is safer and cleaner in operation than the oil-fired temporary heating unit, and has greater output and portability than the electric heater. Oil-fired temporary heaters should be avoided unless they can be vented directly to the building's exterior, or be placed in a completely open space of a building that is of non-combustible construction.

Cutting, Welding, and Plumbers' Torches

The second most important cause of fire during construction operations is the use of open flame cutting, welding, and soldering equipment. Cutting and welding in existing buildings should be conducted with adequate supervision, fire watches, and emergency fire protection apparatus to assure that sparks or drops of hot metal do not start fires. Cutting and welding should be controlled by requiring a new permit each day, issued by the general contractor or construction manager, for each location where cutting or welding is to occur. A permit should not be issued until the following conditions are satisfied:

1. It has been determined that cutting and welding can be safely conducted at the desired location;
2. Combustibles have been moved away or safely covered;
3. Fire watchmen with extinguishers are posted for the duration of the work and for 30 minutes after work completion; and
4. Cutting and welding operations cease 2 hours prior to the close of construction each day to minimize the risk of undetected smoldering fire.

Permits and the inspection and maintenance of fire protection systems should be managed by a fire protection manager employed by the contractor or construction manager. (For small projects, the construction foreman may fill this role.) In addition to issuing and logging-in the cutting and welding permits, the fire protection manager should routinely inspect cutting and welding locations, all temporary heating equipment in operation, existing fire protection systems and exits, and first aid fire fighting equipment. ("First aid" fire fighting equipment refers to fire extinguishers and available water sources available at the job site for providing the "first aid" in fighting a fire.) At the end of each work shift, the fire protection manager should file a written report with the construction manager or contractor and the owner. Any violations or unsafe conditions relating to fire protection should be immediately reported to the construction project manager for action, including halting unsafe operations, improving fire protection measures, and notification of the owner.

A fire watchman reporting to the fire protection manager should be stationed at each cutting or welding location. The fire watchman's responsibilities include watching the work area for falling sparks and molten metal; covering combustible materials with fire blankets and maintaining such protection; and inspecting and maintaining first aid fire fighting equip-

ment. For smaller projects, the construction fireman or other designated people should be assigned the responsibility of inspecting of each cutting and welding location frequently during the day (see figure 2).

The extent of first-aid fire fighting equipment is dependent on the size and type of building and scope of project work. At a minimum, even for restoration work in a small house museum, one or two ABC-type fire extinguishers should be placed in plain sight on each floor of the building where work is taking place. The available water supply should be located and clearly marked, maintained, and provisions made for its ready use.

For all rehabilitation projects, the provision and/or maintenance of exits is of critical importance, both for life safety of construction personnel, and for fire fighters' access to work areas. For major rehabilitation projects in large and tall buildings, the handling of exit stairways is of great importance. Existing exit stair towers should be maintained, and construction priority given to the completion of new exit stairways. Where an existing fire door requires replacement, the old door should be removed and the new door and hardware installed immediately. While perhaps not as efficient as removing all doors in one phase and installing all new doors in a second phase, replacement on a one-for-one basis ensures that no more than one fire tower door is out of operation at any time during construction.

Prior to the commencement of any major rehabilitation on the small or large historic property, the owner and construction manager or contractor should meet with the local fire marshal to plan site and building access in the event of fire. The extent of fire department coordination is dependent on the size and location of the project, the significance of the structure, and the type of hazardous operations included in the project scope. Access paths for heavy fire fighting equipment should be laid out and maintained. Free access from the street to fire hydrants and to outside connections for standpipes, sprinklers or other fire extinguishing equipment should be provided and maintained.

The third most common cause of fire during construction is smoking and matches — entirely a construction management issue. Construction specifications for rehabilitation work should always prohibit smoking within the building, and enforcement of the prohibition is a priority responsibility of the contractor or construction manager.

A fourth cause of fire in historic buildings is the use of heating devices to remove paint. Due to the high fire risks, the use of open flame devices to remove paint should



Figure 2. Because of the fire risks, open flame cutting and welding deserves careful attention both in the preparation of specifications and during the work. As much welding as possible should be done off site. For example, at the Nightingale-Brown House, several large trusses were assembled off site, then carefully hoisted through a window for installation. Photo: Irving B. Haynes and Associates.

be prohibited in the specifications. Special precautions should be delineated when allowing heat plates and especially hot air guns. In addition to the possibility of igniting the wood, there is the even greater risk of ignition of flammable debris commonly found in wall cavities and behind cornices (see *Preservation Tech Note Number 18*). Where heat devices are permitted, their use should be prohibited from cornice soffits or other similar conditions where friable combustible material may be exposed to heat through cracks and open joints. Additionally, paint removal work should stop at least two hours prior to the site being vacated each evening, to increase chances of early detection of any smoldering fire. The area of the day's work must also be carefully inspected. Construction specifications should also require that temporary fire detection devices be installed in close proximity to the specific work area and that the alarm system be directly monitored.

Protection of Historic Interior Features and Finishes

An important difference between protecting historic interior features and finishes and protecting new interior features and finishes during construction is in the timing of the construction schedule. In new work, important and fragile casework and finishes are installed late in the construction schedule, after mechanical and electrical

systems and other high impact work are completed, thus not exposing the finishes to major construction operations. In preservation work, however, existing interior finishes are exposed to all the high impact and potentially damaging construction phases of the project, except to the extent that such finishes are temporarily protected or separated from construction work.

Important architectural features which are easily removed should be stored off site, if possible, to protect them from vandalism, theft and damage during construction. Lighting fixtures, fireplace mantels, and interior doors are typical examples. Less movable architectural material or finishes such as wallpaper are often best retained in place but may require custom-designed protective measures developed and monitored by a conservator (see figure 3).

Access by construction personnel to spaces with significant features and finishes should be restricted, except for their work relating directly to the preservation

of such spaces. Spaces with restricted access should be identified by the planning team and indicated in the construction documents in order to allow the contractor to include any associated costs in his price proposal (see figure 4).

For spaces such as halls and lobbies, it may not be practicable to limit access, and for all interior spaces, some construction work may be required. In such circumstances, interior finishes must be physically isolated from construction operations by means of protective barriers and coverings. Such surfaces are generally limited to flooring, walls up to approximately 6 foot height, and special construction such as staircases. Only under unusual circumstances do ceilings or upper wall areas require physical protection during construction. Examples are walls with historic wallcoverings or fragile ornamental ceilings that are at risk to physical abuse or to vibration damage caused by construction activities.

Flooring should be protected from damage caused by abrasion, falling objects,

dust and dirt, and spilled liquids (see figure 5). If work in, or traffic through, a particular space does not involve one or more of these risks, temporary protection may be reduced. Damage caused by abrasion can be controlled by means of protective coverings such as canvas tarps or resilient wood fiber panels. Canvas tarps should overlap and be taped at all joints. Resilient wood fiber panels should be carefully fitted with tight seams and laid continuously wall to wall. Joints should be taped to avoid displacement of the panels after setting. For added safety, resilient panels left exposed should also be fire-retardant treated to achieve a UL Class A listing for flame spread and smoke developed. Such a readily available product is N.C.F.R. Homasote.

For greater protection from physical force, a layer of plywood can be applied over the Homasote panel underlayment, with joints staggered to stabilize the assembly. In this double layer assembly, the top plywood should be treated with a fire-retardant, but the underlayment need

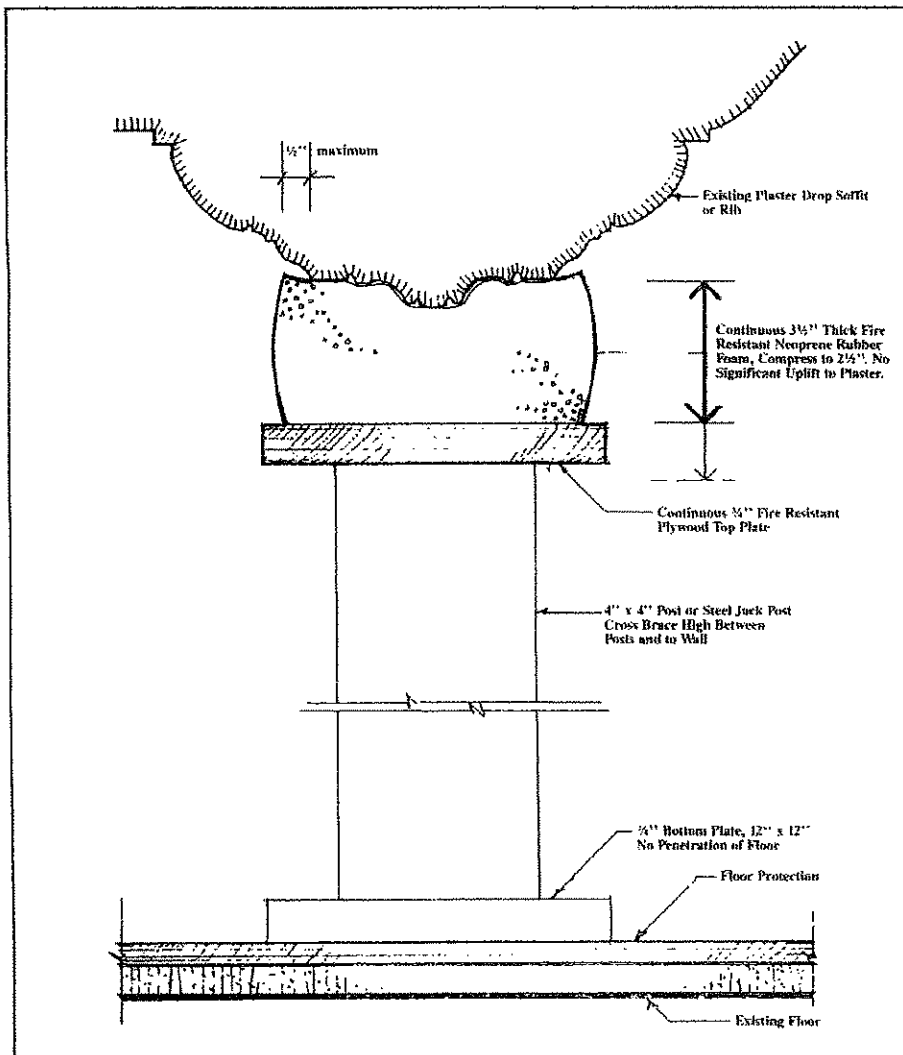


Figure 3. Vibrations generated during construction may necessitate the installation of temporary support for such fragile features as plaster ceiling cornices and soffits. Drawing: Villard Houses — courtesy of Emery Roth & Sons Architects, P.C. Photo: The Octagon, Lonnie Hovey, AIA.

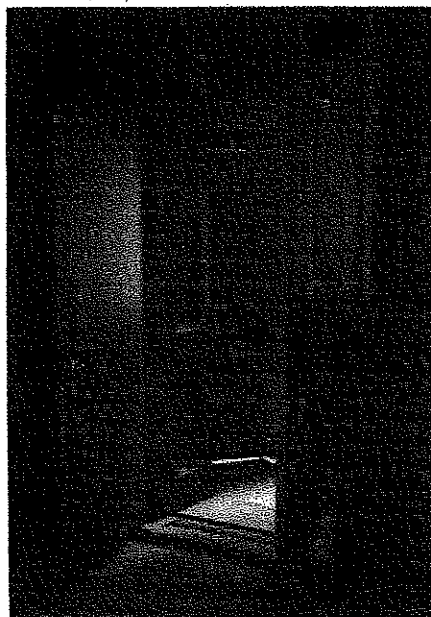


Figure 4. Temporary protection during construction can involve covering historic features, such as floors and walls, as well as using temporary doors to control the passage of workers and the inevitable dust and dirt. Prominently located fire extinguishers are mandatory. Photo: Lonnie Hovey, AIA, The Octagon.

not be. Where protection from spilled liquids is required, a layer of polyethylene sheeting should be applied between the Homasote panels and the plywood top layer. Care should be taken in planning the protection assembly to ensure that moisture from spilled liquids is not trapped against the historic flooring. Otherwise, the staining, splitting, wood-grain raising, or stone-finish destruction could potentially go undetected for months while concealed from view under the protection assembly. Care should also be taken to avoid sheet coverings such as building felt, which could potentially stain the historic flooring.

Wall protection is typically fabricated from fire-retardant treated plywood attached to wood framing. The assembly should be self-supporting and self-bracing, secured at its base to the floor protection assembly. Struts and walers need to be provided, as required, to brace the assembly without installing fasteners into the historic wall finish. Careful assembly includes using screw fasteners in order to eliminate hammering during assembly and ripping damage during disassembly. Where wood framing, furring, or panels abut historic wall materials, the back side of the

protective assembly should also be padded using strips of neoprene or strips of Homasote board, glued to the protective assembly member.

Historic stairways, balustrades, balconies, fireplaces, door surrounds, window surrounds, and other components will also need to be protected from construction damage by combining the techniques described for floors and walls (see figure 6). Horizontal surfaces should be protected as floors, and vertical assemblies treated as walls, with the major difference being the complexity of the framing required.

Specifying Protection

Detailing and specifying temporary protection of historic interiors during construction is the responsibility of both the architect and contractor. Most general conditions of a construction contract contain language similar to *AIA Document A201, General Conditions of the Contract for Construction*: "The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the work."² The same document in a later paragraph states, "The

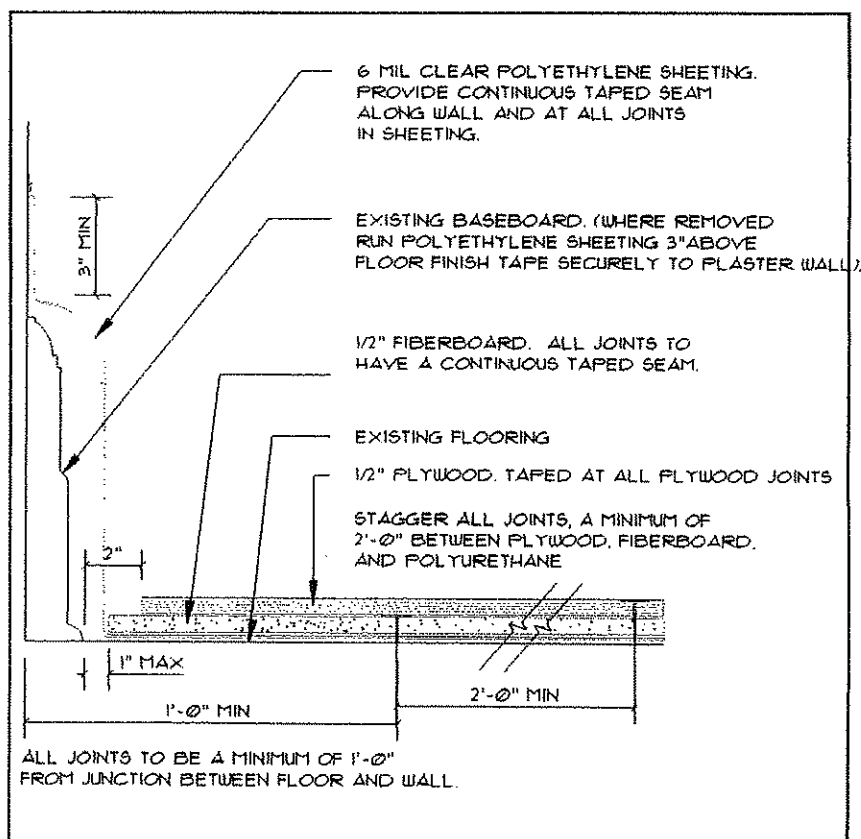
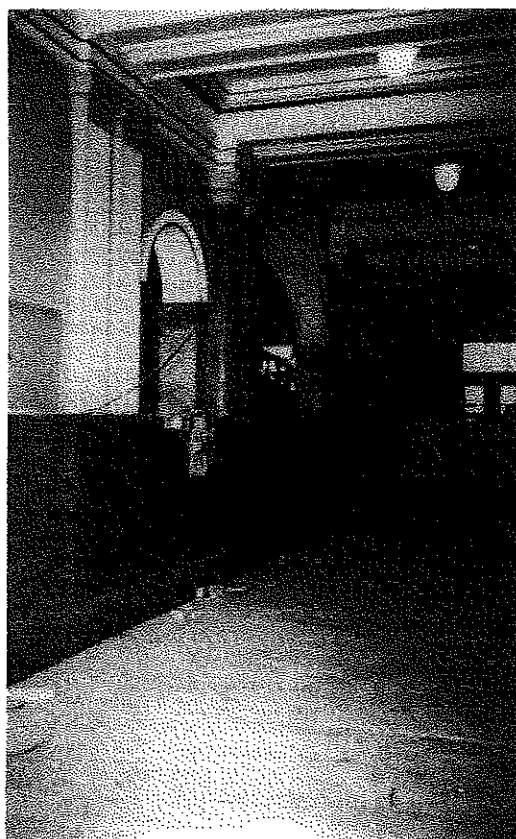


Figure 5. To provide for adequate floor protection in the New Jersey State Capitol, this area was swept clean, then covered with polyethylene sheeting to protect against spills and dirt abrasion. Fiberboard (1/2" thick) was placed over floors and the joints sealed with tape. Finally 1/2" plywood was laid with all joints taped. This floor protection system has been successful over many years of use and is recommended in major construction areas, and where tile, marble, parquet wood, or other historic flooring is involved. Photo and drawing: Ford Farewell Mills and Gatsch Architects.

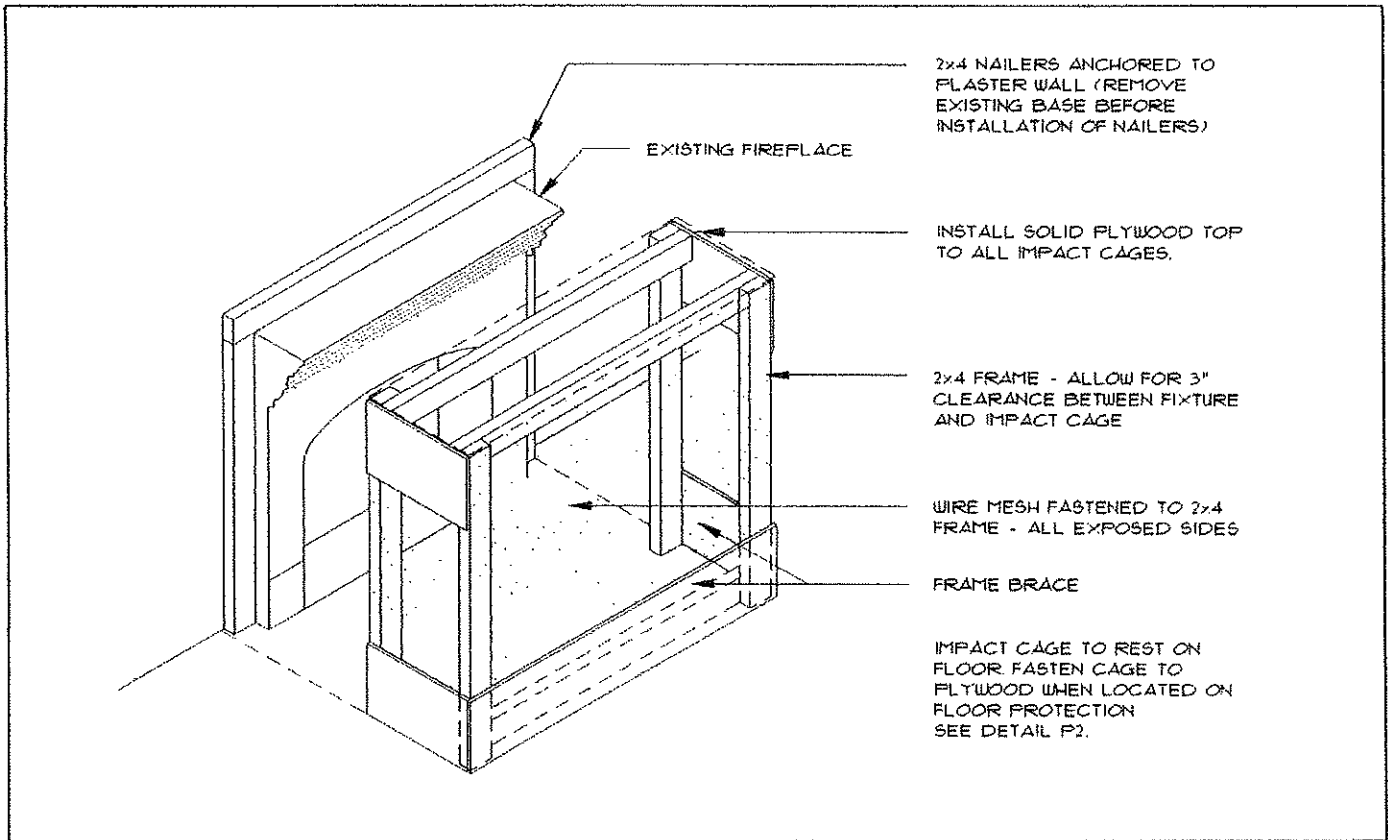


Figure 6. A self-supporting impact cage utilizing wood and wire mesh protects the fireplace. In this project, the long construction process required bidders to have visible access to features such as the fireplace. The wire mesh also facilitated monitoring during the lengthy construction. Photo and drawing: Ford Farewell Mills and Gatsch Architects.

Architect will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work."³ And, directly related to temporary protection, "The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection

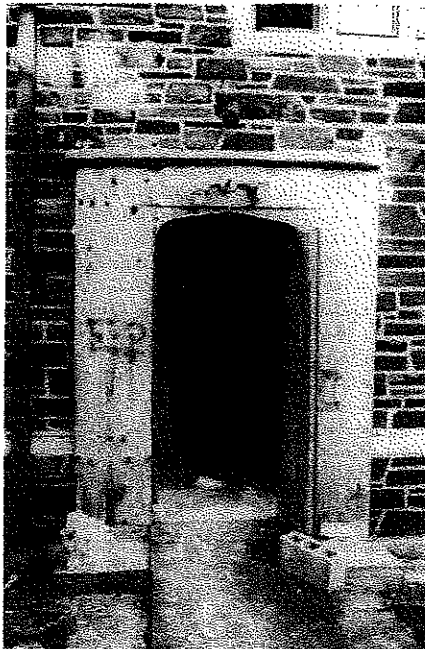


Figure 7. A contractor's solution to protecting the limestone door surround consisted of thin foam sheeting, secured with wood nailed to the masonry. This protection was rejected as inadequate by the architect, and a full plywood enclosure constructed. In the architect's solution, it should be noted that a temporary door is used while the original door is stored for safe keeping during construction. Photo: Ford Farewell Mills and Gatsch Architects.

to prevent damage, injury, or loss to . . . other property at the site or adjacent to . . . not designated for removal, relocation, or replacement in the course of construction."⁴ Thus, the contractor is responsible for the means and methods of construction, including protection of public and property. The courts have reinforced this concept by holding an architect liable for construction injuries where the architect took an active role in enforcing construction safety practices.

The above notwithstanding, architects routinely specify temporary facilities including temporary utilities, temporary construction and support facilities, and security and protection services. For preservation projects, it is recommended that temporary protection of historic interiors during construction be specified in a separate Division 1 specification section entitled "Special Project Procedure" or "Restoration Project Procedures" to ensure that required provisions are not overlooked by bidders because they appear in the often lengthy Section 01500—Temporary Facilities. Under competitive bidding circumstances, bidders logically seek to minimize the cost to the project for providing temporary facilities, including temporary protection of historic interiors. By creating a separate section in a price proposal, the bidder will be inclined to treat the "special project procedures" as an added cost rather than a part of the temporary facilities required for any alteration project. The contractor's project manager can thus anticipate making reasonable expenditures for providing specified temporary protection during construction. To ensure the adequacy of temporary protection measures in projects involving a construction manager, temporary protection is often best provided by the construction manager, who normally works for the owner on a cost-plus-fee basis (see figure 7).

Temporary protection should generally be specified rather than detailed, with details provided by the contractor as shop drawings. Materials permitted and prohibited, fasteners, attachment to existing construction, descriptions of assemblies, and other provisions should be specified in adequate detail to enable the contractor to prepare shop drawings for specific field conditions. More detailed requirements may be involved where a conservator's plan is required for select items or rooms due to their special significance.

The temporary protection of historic interiors during construction is also affected by other specification sections. In Section 01045—Cutting and Patching, it should be clearly stipulated *who* is to perform cutting and patching in spaces involving historic interiors. This is particularly

important in multiple prime contracts, where each contractor is responsible for his own cutting and patching. Unless carefully specified, all the positive temporary protection work specified in Section 01100 may be lost to damage done during cutting and patching work. In Section 01500—Temporary Facilities, requirements for trash chutes affect fire protection, as do requirements for field offices, materials storage and site access. Additionally, dust control, whether specified in Section 01500 or in Section 02070—Selective Demolition, must not be permitted in historic buildings by means of water sprinkling.

Conditions prior to commencement of construction should be photographically documented by the contractor. For large preservation projects, project specifications

Special Hazards Involving Large Buildings

The rehabilitation of large buildings demands the greatest planning for fire safety. Although structural components are typically noncombustible, other building assemblies, stored materials, and finishes are not. A number of special hazards are created during rehabilitation that could cause major damage to the historic building. Alterations to fire stairs and elevators may create unwanted, unprotected multi-story shafts which behave as flues in the event of a fire. Alterations to fire stairs, fire separations, and fire sprinkler systems may require the deactivation or partial deactivation of such systems during construction work. Building heat and water are often turned off during major building rehabilitation, introducing the hazard of temporary heat while reducing the protection afforded by a quickly accessible water supply. And finally, the rehabilitation of major structures typically involves large construction equipment, including those powered by internal combustion engines within or immediately adjacent to the buildings.

For large, non-combustible construction structures requiring the use of internal combustion engines indoors, fuel storage, equipment operation, and equipment service should be addressed in the specifications. Except for propane-fueled "bobcat" loaders, all exhausts should discharge to the building exterior. Fuel for internal combustion engines should not be stored and equipment should not be serviced within the building.

may require a professionally prepared videotape survey of the entire building interior. For small projects, a videotape survey may also be an effective supplement to existing conditions photographs. The owner may wish to document existing conditions independent of the contractor in order to avoid any future dispute regarding damage caused by construction operations as opposed to pre-existing damage.

Conclusions

Temporary protection of historic interiors during construction, an essential component of any preservation project, is largely a construction management issue. A successful protection program is the result of careful pre-planning, thorough project-specific specifications, owner vigilance, contract enforcement, and contractor diligence. Cost savings can be realized by minimizing damage to the historic structure in the course of construction work. Even more importantly, a successful protection program controls risks and hazards that could otherwise result in the loss of significant historic materials and finishes — or an entire building.

NOTES

¹NFPA 241 is available from the National Fire Protection Association, Quincy, Massachusetts, telephone 800-344-3555.

²AIA Document A201, General Conditions of the Contract for Construction, Paragraph 3.3.1.

³AIA Document A201, Paragraph 4.2.3.

⁴AIA Document A201, 10.2.1.3.

For further reference, see *Preservation Tech Notes* Number 18 on paint removal and Number 10 on temporary protection of historic stairways.

This PRESERVATION TECH NOTE was prepared by the National Park Service. Charles E. Fisher, Preservation Assistance Division, National Park Service, serves as Technical Editor of the series. Special thanks go to Marilyn Kaplan of Preservation/Architecture, for her comments and review, and to Annabelle Radcliffe-Trenner, AIA, RIBA, Ford Farewell Mills and Gatch Architects; Nancy Davis and Lonnie Hovey, AIA, The Octagon; Caroline Alderson and Daniel Niner, General Services Administration; and Martha L. Werenfels, AIA, Irving B. Haynes and Associates, Architects, for their assistance.

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Cover Photo: Urban Archives, Temple University, Philadelphia

maintaining and preserving cultural resources. All techniques and practices described herein conform to established National Park Service policies, procedures and standards. This Tech Note was prepared pursuant to the National Historic Preservation Act, as amended, which direct the Secretary of the Interior to develop and make available to government agencies and individuals information concerning professional methods and techniques for the preservation of historic properties.

Comments on the usefulness of this information are welcomed and should be addressed to Tech Notes, Preservation Assistance Division, National Park Service, P.O. Box 37127, Washington, D.C. 20013-7127.



TEMPORARY PROTECTION

NUMBER 3

Protecting a Historic Structure during Adjacent Construction

Chad Randl

Technical Preservation Services
National Park Service

IDENTIFYING AND AVOIDING RISKS FROM ADJACENT CONSTRUCTION

Valued for their ability to convey the past through existing materials and features, historic buildings must also survive in an ever-changing present. That change is often characterized by new building construction and demolition activities on neighboring sites. Whether it is the modest renovation of an existing building or the demolition of an existing structure and construction of a new high rise, physical damage to an adjacent historic building may occur. It is important for both the historic property owner and those responsible for the neighboring work to give careful consideration to the potential risks. Early planning offers the opportunity to identify these risks and to determine successful ways to avoid them.

Problem

The forces that contribute to the deterioration of a historic building, from atmospheric pollutants to the footsteps of visitors, often take decades and even centuries to exact their toll. Demolition activities and new construction on neighboring sites, however, can cause immediate harm to the physical integrity of a historic structure. In the instant it takes an improperly planned excavation blast to crack the foundation of an adjacent historic structure, or for a

steel beam to be dropped from a construction crane onto its roof, significant damage may occur. Additionally, adjacent construction work can expose the neighboring historic building to concentrations of dust, vibration and fire hazards that would normally be experienced only over the course of many years.

These concerns are often overlooked when a project is undertaken next to historic resources. In some situations, the historic property manager may be unaware of the nature and extent of work at an neighboring site. In other cases, the new construction team is not familiar with the particularly fragile character of the neighboring historic structure or decides to repair any damage after the fact rather than avoiding it from the beginning.

Solution

Effective planning and protective measures initiated before construction takes place can prevent most of the damage that may occur to adjacent historic buildings. Depending upon the nature of the project, protective measures may be limited to documenting and monitoring the historic structure or may encompass a broader plan that includes encasing windows, indepen-

When historic structures are exposed to adjacent construction or demolition work, a protective plan including documentation, monitoring and specific safeguards should be implemented to prevent damage and loss of historic fabric.

dent review of excavation procedures and a range of other precautions. Cooperation between all parties can help to ensure that construction activity continues without interruption and that the neighboring historic building is preserved unharmed.

The information provided in this *Tech Note* can serve as a basis for discussions between the historic property manager and the developer of the adjacent site aimed at ensuring the protection of the historic building in a cost-effective manner. This guidance is also applicable where new construction is undertaken on the same site as the historic structure.

Although adjacent construction work often poses a more immediate threat than the incremental impacts of weather or pollution, the best defense for both situations is that buildings be in good condition. A well maintained structure with tight mortar joints, strong connections between interior and exterior walls, solid foundations and sound plaster is at less risk from neighboring activity than a neglected structure.

Providing adequate protection involves the following steps: 1. consultation between the historic building owner and development team to identify potential risks, negotiate changes and agree upon protective measures; 2. documentation of the condition of the historic building prior to adjacent work; 3. implementation of protective measures at both the construction site and the historic site; and 4. regular monitoring during construction to identify damage, to evaluate the efficacy of protective measures already in place, and to identify and implement additional corrective steps.

Consultation

Early consultation between the historic property owner and the developer of the neighboring construction site is the first and often most important step. Establishing such contact has many advantages. Consultation provides the foundation for a mutually beneficial relationship that is cooperative rather than adversarial. The process gives the historic site owner an opportunity to become familiar with the scope of the impending project and for the development team to understand the historic structure's vulnerabilities. Consultation permits all parties a chance to propose, discuss, and negotiate changes to the construction plan that reduce the risk of damaging adjacent historic

resources. The ultimate goal is to draft a protection plan acceptable to both parties.

Resolving concerns before construction is underway can save time and money, as well as the need to repair damaged historic fabric. It is crucial that such discussions take place during the paper stage of the project, before final decisions are made. If not, the developer may conclude that changes would be cost prohibitive and that it is preferable to repair damage after it takes place. Early consultation also provides information that can be used to assess whether the level of insurance coverage is sufficient to meet the specific project risks.

The owner of a historic property cannot in most cases compel the support and cooperation of the development team. If, after consultation has been attempted, the level of protection provided is not sufficient, the aid of local building officials should be sought. Local building officials, through the permitting process, can often insist that changes be made to development plans to ensure that adjacent properties are protected. Local building codes may also provide safeguards by establishing certain conditions such as maximum vibration levels.

Other parties can also participate in and contribute to the consultation

process. The support of neighborhood committees, local non-profit preservation organizations, independent engineers and the historic district commission (if applicable) may be enlisted to ensure that protection concerns are fully addressed. The developer will benefit from the assembly of a team, including or representing the general contractor, architect, structural engineer, construction manager, and subcontractors, who can be present at consultation meetings and play a continuing role in balancing protection efforts with development interests.

Preconstruction meetings should address several issues. Most important, the parties should reach an understanding about what steps will be taken to protect the historic structure (*see figure 1*). Responsibility for implementing the agreed upon protections should be established among the developer, the general contractor and relevant subcontractors, and the historic property owner. Such decisions should be listed in performance specifications that accompany agreements between the contractor and the developer. A walk-through of the historic building by the development team is also advisable. Finally, schedules for major work such as excavation, and requirements for materials delivery, site storage, and other use of the premises by the con-

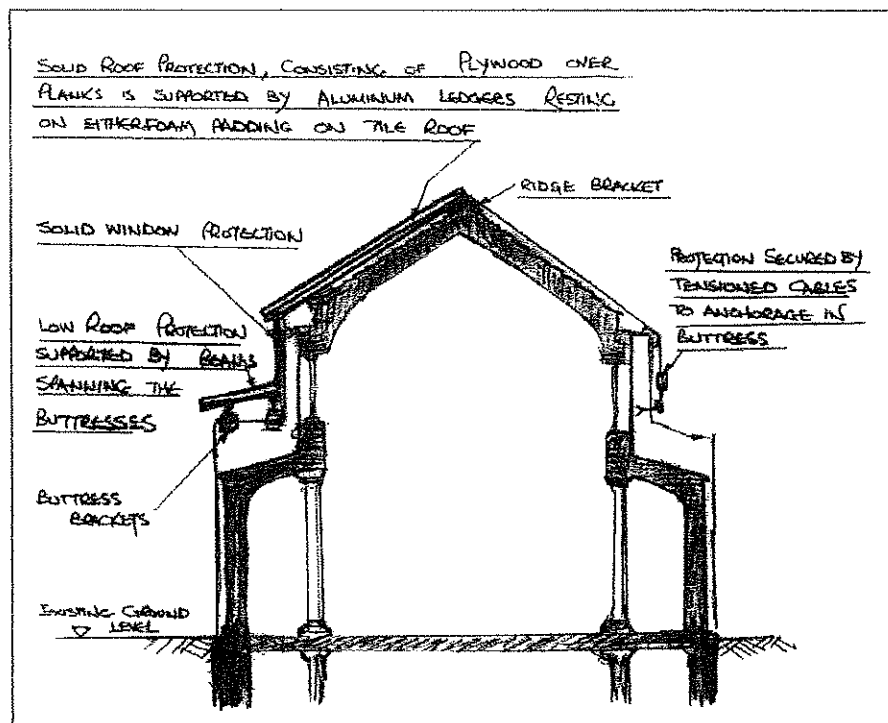


Figure 1. Before new construction was undertaken to the left of this church, a subcontractor was hired to design a protective system for the tile roof and clerestory windows. Drawing: Alan Shalders, Universal Builders Supply, Inc.

tractor should be discussed and arranged to minimize disruptions to the historic site.

Documentation

A crucial step following consultation with the developer is to document the existing condition of the historic structure. Such an investigation provides a "baseline" from which changes to the building during the adjacent construction can be identified, monitored and assessed. Like the consultation process, thorough documentation benefits both the historic property owner and the developer. For the former, it may be used to substantiate claims that damage occurred as a result of the neighboring construction work by illustrating the previously sound condition of the historic building. If the damage existed prior to construction work, the record can show that it was not caused by the developer's negligence. In the case of future litigation, the documentation record can serve as evidence along with the testimony of the professional who undertook the assessment.

Both parties should ensure that the documentation is objective and accurate. Joint surveys, in which both the developer and the historic property owner participate or sign off on noted conditions, are most likely to ensure that the resulting data are not in dispute. When the developer pays for the assessment, it is advisable that an independent professional be hired and that the survey results be accessible.

Information obtained through documentation can also be used in formulating a protection plan for the historic building. By characterizing existing damage and exposing potential weaknesses, the documentation process identifies areas of the structure that may require additional protection as well as appropriate locations for monitoring equipment. Features that should receive particular attention during visual inspections would also be highlighted. Although a formal building condition survey including analysis, repair proposals and cost estimates is not necessary, the property owner may find that the disruptive period during adjacent work provides an opportune time for a thorough survey program.

Documentation of existing conditions should take the form of written descriptions, 35mm color photographs and/or a videotape recording. Photographs should show both the interior and exterior of the building, with

close-up images of cracks, staining, indications of settlement or other fragile conditions. A complete interior and exterior crack survey should be undertaken to identify and characterize existing cracks (see figure 2). Their locations can then be plotted on a drawing of each wall or ceiling surface. While identifying every hairline crack may be impractical in a large building or one that exhibits a great deal of preexisting damage, the more thorough the documented record, the better. The condition of features such as arches, chimney stacks and parapet walls determined by the engineer to be particularly susceptible to distress should also be recorded even when no damage is apparent.

Common Risks and Protective Measures

Each instance of new construction or demolition next to an existing historic structure will involve varying risks to that structure. The proximity of the historic site to the project and the scope of the project are two of the most significant variables. Construction of a high rise building with deep foundations is more likely to affect a neighboring structure than the rehabilitation of a nearby rowhouse. However, the converse may be true if the rowhouse is

directly adjacent to and sharing a wall with the historic structure. Other factors influencing the degree of likely impact include the age, construction type and structural integrity of the historic building, as well as the depth and makeup of its foundation and its surrounding soil types.

Owners should also anticipate the effect increased dust, vibration and fire risk will have upon interior architectural features and furnishings. For the most sensitive objects, such as chandeliers, paintings and glassware, temporary removal to an off-site location may be the safest course. Those features that cannot be easily removed, including plaster ceiling medallions and cornices, can be cushioned and buttressed by padded wood supports. Additional information concerning the safeguarding of interior features can be found in the preceding *Tech Note* in this series, "Temporary Protection, Number 2. Specifying Temporary Protection of Historic Interiors During Construction and Repair."

The remainder of this section addresses some of the more common dangers to historic structures when new construction or demolition activities occur nearby. The description of each potential impact is accompanied by suggested approaches for reducing or eliminating those risks.

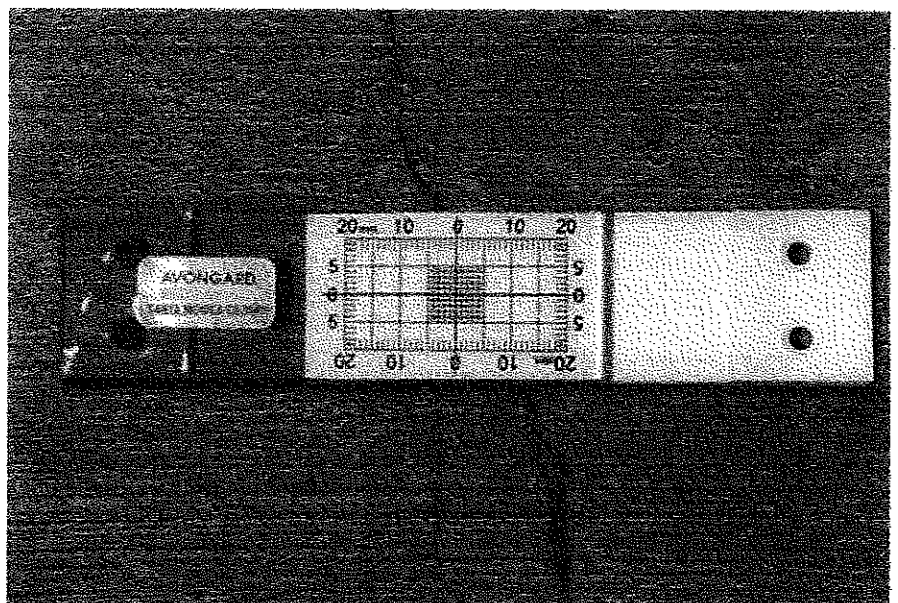


Figure 2. With advanced notice of adjacent construction activity, a crack monitor can be used to determine whether existing cracks in the historic building are stable or still experiencing movement. Compared with measurements taken during the monitoring phase, such information can help determine if subsequent movement resulted from work on the neighboring site. Photo: Avongard Products U.S.A., Ltd.

Vibration

Demolition and new foundation work are common sources of vibrations that can affect adjacent structures. The tools and methods used in demolition, such as impact hammers, wrecking balls, pavement breakers and implosion blasting, produce vibrations that may be transmitted to the historic structure. Similarly, techniques used to prepare new foundations (pile driving and blasting) create potentially dangerous vibrations. Vibrations may also be caused by increased truck traffic accompanying new construction or demolition work. In all cases, the force of the vibrations reaching the adjacent historic structure depends upon the activity generating the vibrations, the distance between the source and the existing structure, and the type of soil or pavement found between the two.

Historic structures may be particularly vulnerable to the effects of vibrations generated at an adjacent site. Deferred maintenance and past alterations may have produced structural weak points that are susceptible to damage. Historic finishes, such as plaster walls and ceilings, lack the flexibility to accommodate abnormal movement, while shallow foundations (common in historic buildings) may lack the rigidity to resist vibration induced movement.

Mitigating the effects of vibrations should begin during the consultation process when acceptable levels can be set and alternative processes explored. Hand demolition is an appropriate substitute when conventional demolition activities may cause excessive vibrations. If pile driving is likely to damage adjacent structures, the contractor may be able to employ non-displacement piles that are inserted in bored holes rather than driven. Lower vibration levels can also be achieved by "jacking-in" or pressing the piles into the ground. Locating delivery entry and exit points farther from the historic site may reduce vibrations caused by increased vehicular traffic. Once construction is under way, continual crack and vibration monitoring provides an effective warning system, indicating that established safe thresholds have been crossed.

Movement

Excavation and foundation work can also cause ground displacement and movement of an adjacent historic

building. New construction almost invariably calls for digging a foundation that is much deeper than the foundations of neighboring historic buildings. This is especially true for projects that include underground parking facilities. A historic structure, with a shallow masonry or stone foundation and wall footings, may experience corresponding displacement that can result in major structural damage.

Efforts to control movement should begin during the consultation phase. Whether the developer's engineer selects underpinning or strengthened excavation walls with tie backs as the means to resist movement of the adjacent structure, the historic building team should retain its own engineer to review the plans (*see figure 3*). The consulting engineer should ensure that the selected approach addresses the unique characteristics and vulnerabilities of the historic structure and that even incidental movement is restricted.

Water

A well functioning water drainage system is essential to the protection of any historic structure. This system can easily be rendered ineffective by neighboring construction or demolition work. Debris originating at the construction site often finds its way to the gutters, downspouts and drains of an

adjacent building. Drainage mechanisms may also become inoperable when excavation workers inadvertently seal off or collapse old pipes running from neighboring buildings. If blocked pipes cannot remove water from both above and below the surface of an historic site, excessive moisture levels or flooding may result.

Regular visual inspections (part of the monitoring program described later) are one of the best means of thwarting increased moisture levels. The inspection procedure should include checking gutters, valleys and exposed drains for any obstructions. Also, indications of dampness or water damage in the basement and where gutters and downspouts meet other building surfaces should be noted.

Construction site runoff from cement mixing and cleaning and dust suppression activities should not flow toward the historic property. Although placing screens and wire cages over exposed areas of the drainage system may provide some protection from obstructions, such installations need to be inspected just as frequently. Low-pressure water washes can occasionally be used to flush the system of dirt and debris. To reduce the possibility that drainpipes will be blocked at the adjacent construction site, all concealed pipes should be traced from their origins at the historic structure and the

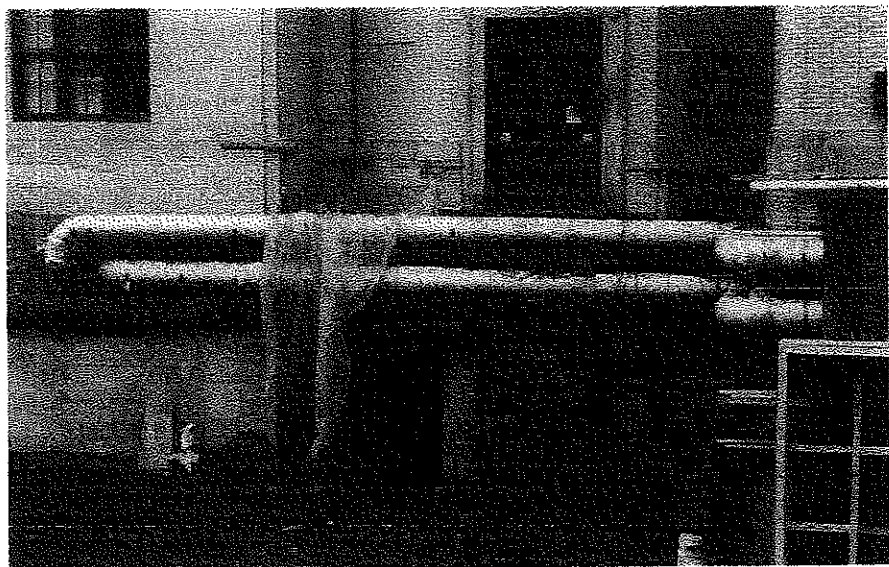


Figure 3. Concrete pier underpinning to an existing building may be necessary when adjacent construction occurs. In this example, pits are hand dug beneath the foundation of the historic building to provide space for wood forms. After concrete is poured into the forms, the space between the top of the pier and the bottom of the original foundation is packed with a quicksetting grout. The historic building owner should retain an independent engineer to ensure that the underpinning plan adequately protects the historic structure. Photo: Professor Arpad Horvath, Department of Civil and Environmental Engineering, University of California, Berkeley.

information passed on to the appropriate contractors. Final landscaping and grading patterns on adjacent construction sites should be examined to ensure that rainwater is not routed towards the historic building.

In some cases, the lack of water beneath an historic structure can lead to damage. Buildings located in areas with a high water table were often constructed upon timber piles. When groundwater or storm water is removed from a neighboring site during foundation excavations (a process known as "dewatering"), the groundwater level beneath the historic site may also drop. Previously submerged timber piles that are exposed to air can quickly begin to undergo dryrot. If there is reason to suspect that the structure was built on such a foundation, the property manager should work with the neighboring construction team to maintain the existing water table. This can be done using watertight excavation support systems such as slurry walls which ensure that most of the water pumped out of the construction site does not come from adjacent properties. Dewatering of soft clay ground may also result in settlement of a neighboring building, as ground water pressure is reduced and the soil consolidates.

Fire and Security Concerns

The heightened possibility of fire accompanies many demolition and new construction activities. Temporary heating devices, torches, sparks, molten metal and undersized electrical utility panels are some of the most common sources of fire at construction sites. Additionally, the improper storage of fuels, cloth rags and brushes also presents opportunities for fire to ignite and spread. The *Tech Note*, "Specifying Temporary Protection of Historic Interiors during Construction and Repair," provides detailed information on reducing the likelihood of fire in situations involving work near historic structures.

The security of a historic building can be threatened when adjacent construction provides opportunities for illegal entry. Newly constructed floor levels at the building site may make the neighboring historic structure's ledges, windows and rooftops accessible to trespassers. Window openings on the historic building should be fastened and all doors from the roof to the interior should be locked. Where a historic structure is protected by an intruder

alarm system, that system should be upgraded to protect rooms that are rendered accessible from the outside. In cases where the historic structure does not directly abut new construction or demolition activity, attention should still be paid to the possibility that incidents of vandalism and theft will carry over to the historic site.

Physical Impact

Construction or demolition can cause direct physical damage to neighboring historic features and materials. Cranes, hoists and workers on upper floors of a construction site can drop building supplies and tools onto an adjacent historic structure. Misdirected debris chutes and backing vehicles may also leave their mark.

Generally, to counter these occurrences, protective barriers are placed over any area of the historic structure deemed at risk. If the new construction will rise above the historic building, plywood sheets should be placed over the roof to distribute the force of dropped materials (*see figure 4*). Plywood covers should also be placed over decorative roof embellishments such as finials and balustrades. Alternately, horizontal netting can be rigged to shield vulnerable rooftop features.

Facades that are directly exposed to adjacent construction sites should receive close attention. To avoid dam-

age, windows should be covered with plywood. Layers of cushioning materials can be placed between the plywood covering and particularly fragile windows, such as stained glass. If entire wall surfaces are vulnerable, scaffolding should be erected against the facade and debris netting placed on the outside of the scaffolding. Plastic sheeting can provide added protection in areas where acidic cleaning solutions may splash onto historic facades, windows and other surfaces.

The best means of protecting a historic structure from physical impact, however, is often to have adequate horizontal and vertical netting and barriers in place at the construction site. When adjacent buildings are adequately considered in the construction site netting and scaffolding plans, protective measures at the historic site can be less intrusive, and the likelihood of damage reduced even further.

Additional Dangers

Other byproducts of new construction and demolition, such as dirt and dust, can also pose threats to an adjacent historic structure. Dust suppression measures including the installation of fabric enclosure systems should first be employed at the building site (*see figure 5*). Despite these efforts, historic building owners will undoubtedly have to deal with raised levels of dust infiltration. Accordingly, vulnerable interi-

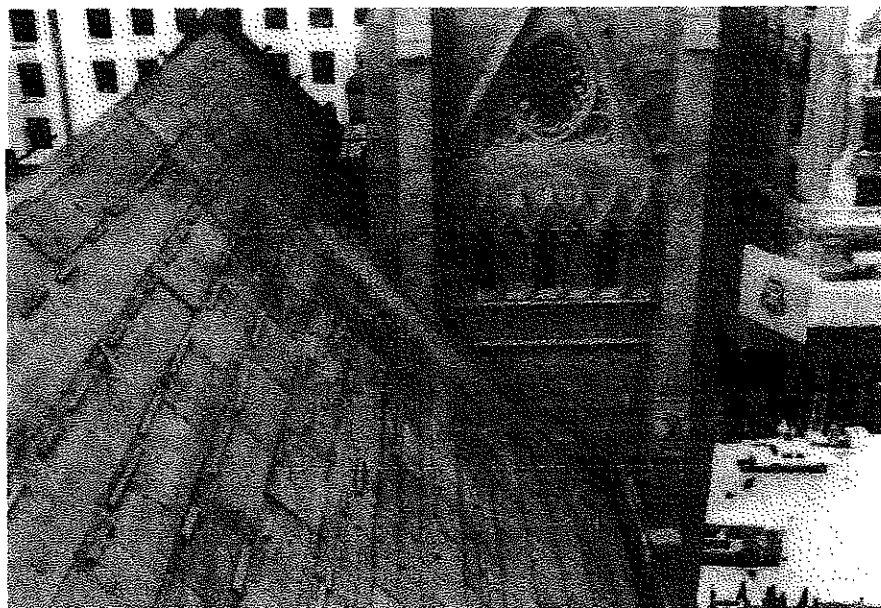


Figure 4. Dropped equipment, tools, and materials all present risks when new construction rises above neighboring historic structures. In this case, the historic slate roof was completely covered with sheets of exterior grade plywood. Photo: National Park Service files.

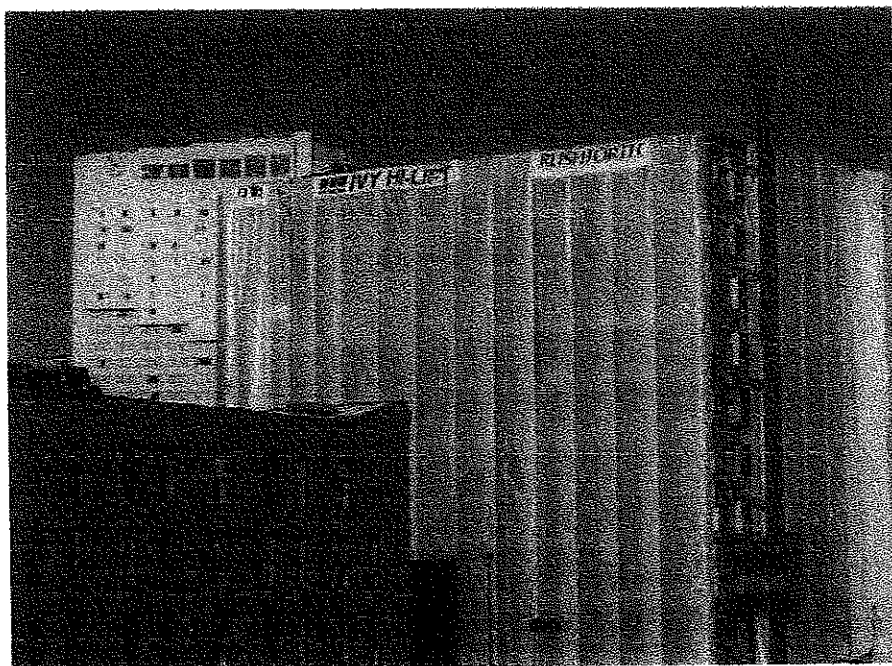


Figure 5. The historic building on the left is partially protected from debris and dust generated by the renovation of the structure to the right. Such temporary enclosure systems consist of a polyethylene or other fabric shell stretched between an aluminum frame. Photo: Walton Technology, Inc.

or objects and artifacts should be covered or temporarily moved to another location. Windows can be taped shut or temporarily sealed with clear polyethylene sheets. Additional mats or carpets near entrances can help reduce the amount of dirt tracked inside. An accelerated maintenance program that includes thorough and frequent cleaning and HVAC filter replacement, is an effective means of addressing the degraded environment surrounding a construction site. To lessen the chance of airborne asbestos infiltration, the exhaust from sealed work areas must be properly filtered and vented away from historic buildings.

The owner of a historic property should anticipate the increased rodent and pest presence that accompanies major demolition activity. Newly opened holes in old foundations are easy escape routes that should be promptly sealed. The construction or demolition site rodent control plan should include provisions for protecting adjacent historic resources. Concurrently, the historic property owner should consider securing a contract with an independent extermination company. Plans should include both preventive measures to reduce conditions favorable to infestation as well as a system of eradication such as rodenticide and traps.

Monitoring

A monitoring program should be established during the consultation and documentation phases and continued until adjacent work is finished. It is undertaken to detect, gauge, record and interpret structural movement, the effects of vibration and other changes to the historic building that result from neighboring construction or demolition work. Data collected during the monitoring program can serve as a baseline for any subsequent movement or changes to site drainage patterns that arise within the first years after construction is completed. Ultimately, monitoring shows the degree to which steps taken to protect an historic structure from adjacent construction are sufficient and successful.

Because of liability concerns, those responsible for a new development will often arrange to monitor an adjacent structure. As with a documentation program, the historic property owner may want to hire an independent engineer to review both the monitoring process and the measurements that result.

The extent of the monitoring program and the tools used will depend upon the scope of the adjacent activity. A basic plan to address concerns over vibration levels may include a single seismograph placed on the structure's

basement floor. More comprehensive measurements can be obtained by locating sensors at several points throughout the structure and the ground immediately adjacent to the historic building foundation (see figure 6).

Whether acceptable vibration levels are mandated by law or left to the discretion of a project engineer, thresholds should take into account surrounding soils, the makeup and condition of the adjacent foundation and the particular vulnerabilities of the historic resource. Construction projects that involve major excavation work next to historic structures should include a program of test blasting before work begins. Testing various charges, delays and blast design configurations will aid in developing a controlled program that limits blast induced damage to a neighboring property.

Structural movement as described in the preceding section is detected and recorded using a number of different tools. Electronic monitors that feed precise movement measurements to laptop computers can be placed across existing cracks (see figure 7). When budgets are tight or a large number of cracks are involved, inexpensive tell-tales made from two sheets of overlaid plastic with a grid can be used to track changes.

Optical survey instruments provide another means of detecting vertical and lateral movement within a historic building. Control points are established and marked by targets or reflectors on the historic structure facade and interior walls before adjacent construction begins. The location of each of these markers is precisely measured at regular intervals. Engineers then use the resulting information to determine whether the markers have shifted from their original positions and, if so, the rate and direction of movement.

A program of visual inspections undertaken by a qualified conservator or engineer is an important adjunct to technical monitoring procedures. Inspectors should look for newly opened cracks, other signs of settlement and movement, and evidence of increased dampness or water infiltration. Additionally, visual inspections should ensure that temporary protective coverings are secure, that dust and dirt are not accumulating in the historic building, and that fire and hazardous material protection provisions are being upheld. A checklist can be drawn up during the consulting and documentation phases for use during



Figure 6. A seismograph records vibrations transmitted at the ground level of an historic building. The instrument is wired to a light and siren designed to warn the excavation crew that vibration levels are approaching preset limits. Additional sensors are often installed in the basement and on sensitive features such as stained glass windows. Photo: Wilson, Ihrig & Associates, Inc.

each visual inspection. Such a systematic written record may also prove useful if disputes arise over the timing of and responsibility for damage.

Conclusion

Protecting a historic building from adjacent construction or demolition activity requires thoughtful planning and cooperation between the developer and the historic property owner. Thorough pre-construction documentation of the historic structure ensures a common understanding of present conditions and suggests appropriate damage prevention measures that can be taken at both the historic site and the construction site. A routine program of visual inspection and vibration and movement monitoring helps insure early detection of the effects neighboring construction work is having on the historic building. Early consideration of these issues, before damage takes place or worsens, can allow for the adoption of safeguards that protect the developer's schedule and budget and the physical integrity of the historic structure.

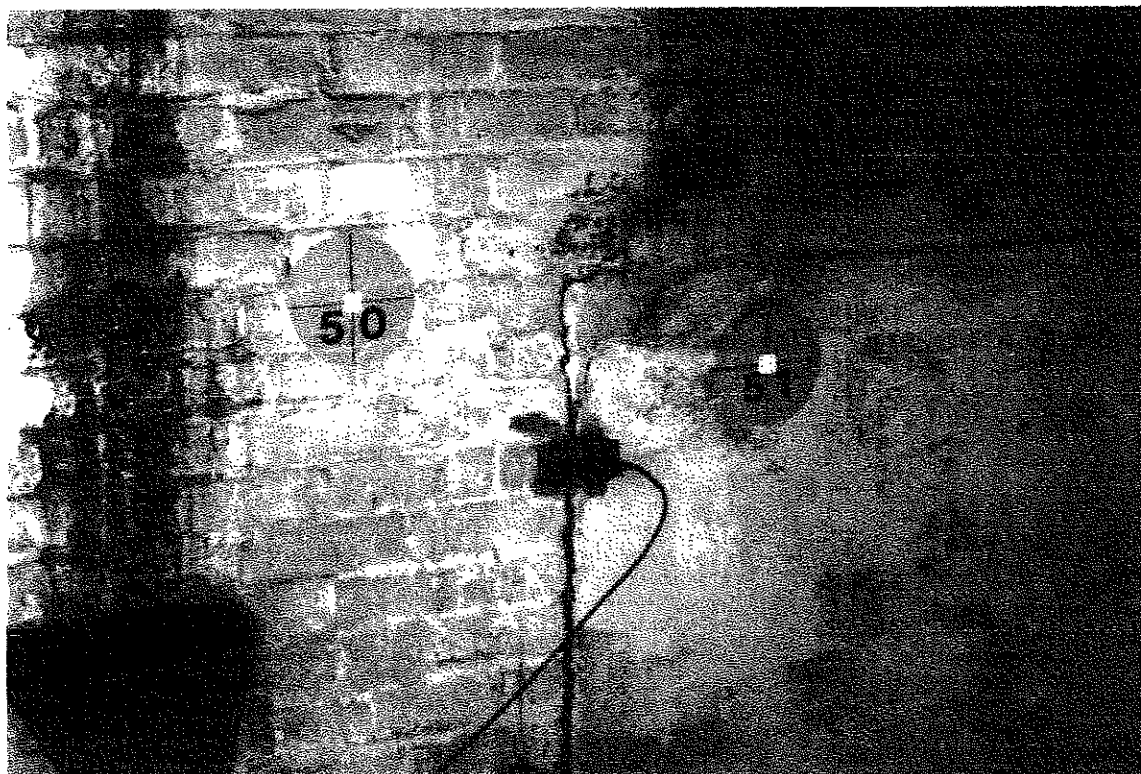


Figure 7. Electronic crack monitor and survey targets are shown installed on an existing wall. The crack monitor feeds movement data to a laptop computer. The targets are aligned and measured with optical survey equipment to determine the degree and direction of movement. Photo: McMullan and Associates, Inc.

Checklist for Historic Property Owner and Historic Site

- ☐ Consult with developer and other parties to determine extent of work and identify necessary protective measures
- ☐ Conduct survey of existing conditions, including 35 mm photographs, crack inventory and description of other damage
- ☐ Include historic building in construction site fire plan
- ☐ Secure windows and rooftop doors that are made accessible by new construction
- ☐ Remove particularly fragile interior objects and furnishings from site
- ☐ Install temporary supports beneath fragile features that are not moved
- ☐ Place plywood coverings on openings that face construction area
- ☐ If adjacent construction rises above historic site, protect roof with plywood covering, encase rooftop embellishments
- ☐ If construction is directly adjacent, cover historic facade to protect against mortar and acidic cleaning solution
- ☐ Install temporary floor coverings at entrance and seal windows facing construction site to limit dust infiltration
- ☐ Remove dust from interior surfaces on accelerated schedule
- ☐ Clean HVAC system & filters on accelerated schedule
- ☐ Clear obstructions from gutters and drainage system regularly
- ☐ Establish monitoring program, including:
 - 1) Seismographs to ensure that effects of blasting, pile driving and other work are at acceptable levels
 - 2) Crack monitors and optical survey methods to detect movement
 - 3) Schedule of regular visual inspection

Checklist for Development Team and Construction Site

- ☐ Consult with historic property owner and other relevant parties to identify necessary protective measures
- ☐ Review and sign off on pre-construction condition survey of adjacent property
- ☐ Arrange delivery locations and times to limit disruption and possible damage to neighboring historic structure
- ☐ Explore excavation and demolition methods that produce low vibration levels
- ☐ Limit movement of adjacent building with sufficient underpinning or reinforced excavation walls
- ☐ Reduce changes to adjacent ground water level during dewatering
- ☐ Ensure water runoff is not directed toward historic structure
- ☐ Install appropriate debris nets to prevent dropped materials from impacting historic building
- ☐ Direct debris chutes away from historic structure
- ☐ Install fabric enclosure system to reduce spread of construction dust
- ☐ Include adjacent historic building fire plan and ensure fuels, rags and brushes are stored appropriately and not directly adjacent to historic site
- ☐ If asbestos or lead remediation is involved, ensure exhaust from sealed building is filtered and vented away from historic site and that lead chips are gathered and removed
- ☐ Include adjacent historic structure in rodent control program and seal openings in demolished foundation
- ☐ Participate in monitoring program at historic site to ensure that vibration levels or indications of movement are within established thresholds

This PRESERVATION TECH NOTE was prepared by the National Park Service. Charles E. Fisher, Heritage Preservation Services, serves as the Technical Editor. Special thanks go to Deborah Slaton and Michael J. Scheffler, P.E., of Wiss, Janney, Elstner Associates, Inc., Sharon Park, Kay Weeks and Michael Auer of the National Park Service's Heritage Preservation Services, and Marie Ennis of Einhorn Yaffee Prescott for their review and comments. Thanks also go to Denis McMullan, McMullan and Associates; Richard Ortega, PE, Ortega Consulting; Dorothy Richter, Hager-Richter Geoscience, Inc.; George Siekkinen and Gregory Mixon, National Trust for Historic Preservation; Suzanne Pentz, Keast & Hood Co.; Mark Richards, Moretrench American Corporation; Dr. Edward J. Cording, Department of Civil and Environmental Engineering, University of Illinois; Mark Gaudschaal, Schnabel Foundation Co.; William Stivale; Robert M. Powers, Powers and Associates; Martin P. Azola, Azola and Associates; and Margaret Gardiner and Mary Knapp at Merchant's House Museum, for their assistance. Tim Buehner, National Park Service, and Camille Martone provided initial research for this publication.

PRESERVATION TECH NOTES are designed to provide practical information on traditional practices and innovative techniques for successfully maintaining and preserving cultural resources. All techniques and practices described herein conform to established National Park Service policies, procedures and standards. This Tech Note was prepared pursuant to the National Historic Preservation Act which direct the Secretary of the Interior to develop and make available to government agencies and individuals information concerning professional methods and techniques for the preservation of historic properties.

Comments on the usefulness of this information are welcomed and should be addressed to PRESERVATION TECH NOTES, Technical Preservation Services NC200, National Center for Cultural Resources, National Park Service, 1849 C Street, NW, Washington, DC 20240.

EXHIBIT I

Historic Reuse Plan

Historic Reuse Plan

Prospect + Ferris Redevelopment Plan

The historic structure now located at 112 Ferris Place, and known further as Block 2504, Lot 14, shall be relocated during the construction of the proposed development and later relocated back to the general vicinity of its current location. The historic structure will then be renovated and upgraded. It will be re-used as an Educational and Cultural Amenity for the residents of the Town of Westfield, consistent with the requirements of the Prospect / Ferris Redevelopment Plan.

The historic structure shall be owned and operated by Ferris Prospect Development, LLC, the same entity that shall own the proposed apartment building. All building and site maintenance related to the historic structure shall be the responsibility of Ferris Prospect Development, LLC.

Educational and cultural activities at the historic structure shall include site visits, historic tours, class trips, for non-profit and similar activities. Use of the historic structure shall not include weddings, private parties and similar events. The historic structure shall not be used by residents or guests of the proposed apartment building.

Use of the historic structure shall be made available to Town of Westfield agencies, together with the Board of Education. Non-profit groups will also be invited to use the historic structure. Tours by Girl Scout and Boy Scout groups, as well as those conducted by the Westfield Historic Society, the Washington Rochambeau Historical Society, and other similar organizations will also be permitted.

Use of the historic structure will primarily be by appointment only. The structure may be publicly accessible on a limited basis (not to exceed 8 hours per week). All appointments shall be made and coordinated through Ferris Prospect Development, LLC. A website shall be established for the building. A small plaque shall be placed outside the building, identifying the owner, owner phone number, hours of operation and the procedures for how to make an appointment.

Hours will be limited to 10:00 AM to 10:00 PM on weekdays, and 9:00 AM to 2:00 PM on weekends. Visits will be limited to two hours each.

Visitors will be dropped off at the loading zone in front of the proposed apartment building.

A patio at the rear of the historic structure shall be made available to visitors of the building as well.

Prior to applying for Building Permits, we will negotiate and execute an agreement for a period of no less than ten years with at least one local, experienced, and reputable non-profit or government organization to conduct programming of cultural and educational events in historic structures such as the Historic Home, or the Town. This agreement shall authorize the non-profit and/or Town to utilize the structure on a regular basis for cultural and/or education events.

We are in talks with the Town and representatives of the Washington-Rochambeau Historical Society New Jersey Chapter. The Washington-Rochambeau Revolutionary Route National Historic Trail (WARO) recently held a series of trail workshops within states associated to the trail. WARO engaged with the owners and managers of high potential historic sites that have a direct correlation to the trail, who meet the following elements: important associates with the Yorktown Campaign, designated historic significance, opportunity to Interpret trail themes, and accessible to the public. Together we Identified current and future opportunities for the WARO visitor experience.

112 Ferris Place was first built circa 1740 and located on E. Broad Street near the site of the Methodist Church. 112 Ferris Place has been Identified as a "Witness house"; General Washington and the Continental Army marched past the house in 1781 on their way to Yorktown. I can imagine young boys and girls sitting on the front porch watching our 1st future President on horseback as he rode by leading the Centennial Army to victory and changing the course of history.

EXHIBIT J

Traffic Impact Statement

STONEFIELD

Revised May 17, 2022

Planning Board
Westfield Town Hall
425 East Broad Street
Westfield, NJ 07090

**RE: Traffic & Parking Assessment Report
Proposed Mixed-Use Development
201 Prospect Street
Block 2504, Lot 12, 13, & 14
Town of Westfield, Union County, New Jersey
SE&D Job No. PRI-210151**

Executive Summary

1. This Traffic and Parking Assessment Report was prepared to investigate the potential impacts of the proposed mixed-use development on the adjacent roadway network. Under the proposed development program, a mixed-use development, consisting of 60 residential units and 500 square feet of first-floor retail space, would be constructed. Access to the site is proposed via one (1) right-in/right-out driveway along Ferris Place.
2. As part of this report, the intersections of Prospect Street and Ferris Place/Trader Joe's Driveway; Prospect Street and Broad Street; Ferris Place and Clark Street; and North Avenue and Clark Street were studied from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 7:00 pm during a typical weekday, and from 11:00 am to 2:00 pm during a typical Saturday. The study time periods were chosen as they coincide with the busiest period of both the adjacent roadway network and the proposed development. The network peak hours were found to be from 8:00 a.m. to 9:00 a.m. (weekday morning peak hour), from 4:45 p.m. to 5:45 p.m. (weekday evening peak hour), and from 11:45 a.m. to 12:45 p.m. (Saturday midday peak hour).
3. The intersection of Ferris Place and Clark Street was studied again in April 2022 to determine the effects, if any, of the YMCA operating at a higher activity level than during October 2021. It was determined that the traffic volumes at this intersection were 17% higher in April 2022 than in October 2021 during the weekday morning peak hour. The data previously collected at the intersection of Ferris Place and Clark Street; the intersection of Prospect Street and Ferris Place/Trader Joe's Driveway; and the intersection of North Avenue and Clark Street were grown by 17% during the weekday morning peak hour to match the April 2022 data. The April 2022 evening peak hour counts were lower than the October 2021 evening peak hour counts and therefore the October 2021 counts were utilized for the evening peak hour.
4. A 2021 Existing Condition analysis was completed to determine the Level of Service and delays on the existing roadway network. Then based on data published by the NJDOT, the 2021 count data was grown by 1.00% for three (3) years to establish a 2024 No-Build Condition, which looks to determine traffic volumes on the roadway network when the proposed development is fully constructed.
5. A peak hour trip generation analysis was completed utilizing the data in the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition. It was found the proposed development is anticipated to generate 23 trips during the weekday morning peak hour, 26 trips during weekday evening

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and Saturday midday peak hours. This equates to one (1) new trip approximately every two (2) minutes during the busiest hours. During off peak hours, such as in the middle of a weekday, the increase in traffic generated by this development is about one (1) car every four (4) to five (5) minutes.

6. The intersection volumes in the 2024 No-Build Condition were compared to the intersection volumes in the 2024 Build Condition to determine the increase in traffic the proposed development would generate to the surrounding roadway network. **Table E1** depicts the percentage increase in intersection volumes from the No-Build Condition to the Build Condition along the study roadways during the weekday morning, weekday evening, and Saturday midday peak hours.

Table E1 – NO-BUILD TO BUILD INTERSECTION VOLUME INCREASE BY PERCENTAGE

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Morning Peak Hour	
	Volume Increase	Percentage Increase	Volume Increase	Percentage Increase	Volume Increase	Percentage Increase
Prospect Street & Ferris Place	6	1.2%	16	3.2%	14	2.9%
Prospect Street & Broad Street	4	0.3%	12	9.1%	11	0.9%
Clark Street & Ferris Place	17	3.9%	10	2.1%	12	2.9%
Clark Street & North Avenue	9	0.6%	6	0.4%	7	0.5%

7. A 2024 Build Condition analysis was also completed and compared to the 2024 No-Build Condition. It was found that there would be minimal increase in delay at the study intersections due to the proposed development. Additionally, the proposed site driveway was calculated to operate with minimal, acceptable delays during all study periods. The average additional delay at each study intersection are as follows:
 - a. Intersection of Prospect Street, Ferris Place, and Trader Joe's Driveway: 0.70 seconds
 - b. Intersection of Prospect Street and Broad Street: 5.73 seconds
 - c. Intersection of Ferris Place and Clark Street: 0.23 seconds
 - d. Intersection of North Avenue and Clark Street: 1.13 seconds
8. Additionally, an analysis was conducted at the intersection of Prospect Street and Broad Street with eastbound left turns prohibited from Prospect Street onto Broad Street.
9. Potential improvements that can help reduce existing traffic concerns on the surrounding roadway network include creating internal circulation within the Trader Joe's parking lot for customers to recirculate while looking for parking. Additionally, improved signage and increased enforcement throughout the area could remedy congestion that occurs due to illegal parking and loading along nearby streets. It is noted that no exiting traffic from the proposed development travels through the Prospect Street, Ferris Place, and Trader Joe's Driveway intersection. Additionally, a loading/drop-off/pick-up area is proposed along the site frontage to provide for a proper and convenient loading area.
10. It is noted that the proposed development generates a minimal amount of increased traffic (about 1 vehicle every 5 minutes) through the Prospect Street and Broad Street intersection during the weekday evening peak hour. Potential improvements outlined within the *Westfield Bicycle and Pedestrian Plan*, dated November 2019, and *The Town of Westfield Unified Land Use and Circulation Element*, dated June 2021, suggested that this intersection may benefit from a traffic signal to better facilitate traffic flow and increase pedestrian safety. Other potential improvements which would also be feasible under future Capital

Improvement projects could include bump outs, raised crosswalks/intersection, or operating the intersection under all-way stop control.

11. It is noted that traffic associated with this project would only be increased by 0.5% at the Clark Street and North Avenue intersection. Potential improvements contemplated in the *Westfield Bicycle and Pedestrian Plan* would still be feasible under future Capital Improvement projects. Those potential improvements include an enhanced pedestrian crossing such as curb extensions/bump-outs. The skewed geometry of this intersection creates longer crossing distances for pedestrians which can be remedied by the suggested curb modifications to allow for shorter, safer crossing distances.
12. A signal warrant analysis was conducted at the intersection of Prospect Street and Broad Street to further investigate potential mitigation measures. It was determined that the intersection meets MUTCD warrant criteria for a traffic signal installation. Additionally, an all-way stop control analysis was conducted at the intersection. It was determined that the traffic counts at the intersection of Prospect Street and Broad Street meet the warrant criteria for the intersection to be signed as a multi-way stop intersection. It is noted that even though a warrant for a signal or an all-way stop condition is met, it does not mean that the installation of either is required, nor is it necessarily recommended. The impacts of an all-way stop condition or a new traffic signal on the nearby signalized intersections along Broad Street was not reviewed and should be considered prior to considering implementation.

Introduction

Stonefield Engineering and Design, LLC ("Stonefield") has prepared this analysis to examine the potential traffic and parking impacts of the proposed mixed-use development on the adjacent roadway network. The subject property is located in the southwesterly quadrant of the intersection of Prospect Street and Ferris Place in the Township of Westfield, Union County, New Jersey. The subject property is designated as Block 2504, Lot 12, 13, and 14 as depicted on the Township of Westfield Tax Map. The site has approximately 200 feet of frontage along Prospect Street and approximately 211 feet of frontage along Ferris Place. The existing site contains a realtor's office, a vacant lot used as a parking lot, and a single-family residence. The existing access is provided via two (2) right-in/right-out driveways along Ferris Place and one (1) full-movement driveway along Prospect Street. Under the proposed development program, the existing structures would be razed and a four (4)-story mixed-use development, consisting of 60 residential units and 500 square feet of first-floor retail space, would be constructed. Access is proposed via one (1) right-in/right-out driveway along Ferris Place.

Methodology

Stonefield Engineering & Design, LLC has prepared this Traffic Impact Study in accordance with the recommended guidelines and practices outlined by the Institute of Transportation Engineers (ITE) within Transportation Impact Analyses for Site Development. A detailed field investigation was performed to assess the existing conditions of the adjacent roadway network. A data collection effort was completed to identify the existing traffic volumes at the study intersections to serve as a base for the traffic analyses. Capacity analysis, a procedure used to estimate the traffic-carrying ability of roadway facilities over a range of defined operating conditions, was performed using the Highway Capacity Manual, 6th Edition (HCM) and the Synchro II Software for all study conditions to assess the roadway operations.

For an unsignalized intersection, Level of Service (LOS) A indicates operations with delay of less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle. The Technical Appendix contains the Highway Capacity Analysis Detail Sheets for the study intersections analyzed in this assessment.

2021 EXISTING CONDITION

Existing Conditions

The subject property is located in the southwesterly quadrant of the intersection of Prospect Street and Ferris Place in the Township of Westfield, Union County, New Jersey. The subject property is designated as Block 2504, Lot 12, 13, and 14 as depicted on the Township of Westfield Tax Map. The site has approximately 200 feet of frontage along Prospect Street and approximately 211 feet of frontage along Ferris Place. Land uses in the area are a mix of residential, commercial, recreational, and educational.

Broad Street (CR 509) is classified as an Urban Minor Arterial with a general north-south orientation, and is under the jurisdiction of Union County. In the vicinity of the site, the roadway provides one (1) lane of travel in each direction with additional turning lanes provided at key intersections to facilitate turning movements, and has a posted speed limit of 25 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is permitted along both sides of the roadway. Broad Street provides north-south mobility within Westfield, from Martine Avenue at its southern terminus to Springfield Avenue at its northern terminus, for a mix of residential and commercial uses along its length.

North Avenue West (CR 610) is classified as an Urban Minor Arterial with a general east-west orientation, and is under the jurisdiction of Union County. In the vicinity of the site, the roadway provides one (1) lane of travel in each direction with additional turning lanes provided at key intersections to facilitate turning movements, and has a posted speed limit of 35 mph. Curb and sidewalk are provided along both sides of the

roadway, shoulders are generally not provided, and on-street parking is not permitted along either side of the roadway. North Avenue West provides east-west mobility within Westfield, from Edgewood Avenue/Crossway Place at its western terminus to Central Avenue at its eastern terminus, for a mix of residential and commercial uses along its length.

Prospect Street is a local roadway with a general east-west orientation, and is under the jurisdiction of the Township of Westfield. Along the site frontage, the roadway provides one (1) lane of travel in each direction and has a posted speed limit of 25 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is permitted along the northerly side of the roadway with two (2)-hour restrictions in effect from 8:00 a.m. to 6:00 p.m., except Sundays. Prospect Street provides east-west mobility within Westfield, from Trails End Court at its western terminus to North Avenue West at its eastern terminus, for a mix of residential, commercial, and educational uses along its length.

Ferris Place is a local roadway with a general north-south orientation, and is under the jurisdiction of the Township of Westfield. Along the site frontage, the roadway provides one (1) lane of one (1)-way travel in the southbound direction and does not have a posted speed limit. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is permitted along the easterly side of the roadway with a no parking restriction in effect from 7:00 a.m. to 8:30 a.m., except Sundays. Ferris Place provides southern mobility within Westfield, from Prospect Street at its northern terminus to Clark Street at its southern terminus, for a mix of residential and recreational uses along its length.

Clark Street is a local roadway with a general east-west orientation, and is under the jurisdiction of the Township of Westfield. In the vicinity of the site, the roadway provides one (1) lane of travel in each direction and has a posted speed limit of 25 mph. Curb and sidewalk are provided along both sides of the roadway, shoulders are not provided, and on-street parking is permitted along the northerly side of the roadway with two (2)-hour parking restrictions in effect from 7:00 a.m. to 7:00 p.m., except weekends. Clark Street provides east-west mobility within Westfield, from Brightwood Avenue at its western terminus and North Avenue West at its eastern terminus, for a mix of residential, educational, and recreational uses along its length.

The subject site is located within 0.2 miles (4-minute walk) from Westfield Train Station which serves NJ Transit's Raritan Valley Line and provides service to New York Penn Station, Secaucus Junction, and Newark Penn Station as well as service to various points of interest throughout New Jersey. Further, the proposed development is located within 0.4 miles (7-minute walk) from bus stops that service two (2) NJ Transit bus routes. NJ Transit Bus Routes 59 and 113 provide service to Plainfield Rail Station, Port Authority Bus Terminal, and various points of interest throughout Union, Essex, and Middlesex County. Additionally, the proposed development is located within 0.1 mile (2-minute walk) from Downtown Westfield, which has various service, retail, and restaurant destinations. The non-vehicular transportation modes available in the general vicinity of the subject site are summarized on **Table 1**.

TABLE 1: MULTI-MODAL TRANSPORTATION OPTIONS

Travel Mode	Proximity to Site	Destination(s)
Westfield Train Station	0.2 miles	New York Penn Station Secaucus Junction Newark Penn Station
NJ Transit Bus Route 113	0.2 miles	Plainfield Rail Station Port Authority Bus Terminal
NJ Transit Bus Route 59	0.4 miles	Plainfield Rail Station Union County College

2021 Existing Traffic Volumes

Manual turning movement counts and pedestrian counts were collected during the typical weekday morning, weekday evening, and Saturday midday time periods to evaluate existing traffic conditions and identify the specific hours when traffic activity on the adjacent roadways is at a maximum and could be potentially impacted by the development of the site. In accordance with the Sophia Redevelopment Plan, the intersections of Prospect Street and Ferris Place/Trader Joe's driveway, Prospect Street and Broad Street, and Ferris Place and Clark Street were studied. Turning movement counts and pedestrian counts were collected at the following intersections:

- ◆ Prospect Street and Ferris Place/Trader Joe's Driveway
- ◆ Prospect Street and Broad Street
- ◆ Ferris Place and Clark Street

Specifically, manual turning movement counts were conducted on the following dates and during the following times:

- ◆ Thursday, October 21, 2021, from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 7:00 p.m.
- ◆ Saturday, October 16, 2021, from 11:00 a.m. to 2:00 p.m.

Additional manual turning movement counts and pedestrian counts were collected at the intersection of North Avenue and Clark Street on the following dates and during the following times:

- ◆ Wednesday, December 8, 2021, from 4:00 p.m. to 7:00 p.m.
- ◆ Thursday, December 9, 2021, from 7:00 a.m. to 9:00 a.m.
- ◆ Saturday, December 18, 2021, from 11:00 a.m. to 2:00 p.m.

The study time periods were chosen as they are representative of the peak period of both the adjacent roadway network and the proposed development. The traffic volume data was collected and analyzed to identify the design peak hour in accordance with HCM and ITE guidelines. Based on the review of the count data, the weekday morning network peak hour occurred from 8:00 a.m. to 9:00 a.m., the weekday evening network peak hour occurred from 4:45 p.m. to 5:45 p.m., and the Saturday midday network peak hour occurred from 11:45 a.m. to 12:45 p.m. The Technical Appendix contains a summary of the turning movement count data and the network peak hour calculations.

Additional manual turning movement counts and pedestrian counts were collected at the intersection of Ferris Place and Clark Street on Tuesday, April 5, 2022, from 7:00 a.m. to 9:00 a.m. and from 3:00 p.m. to 6:30 p.m. to evaluate the existing traffic conditions of the adjacent roadway network with the YMCA at the corner of Ferris Place and Clark Street operating at a higher activity level. Based on the review of the count data, it was determined that the April TMCs were approximately 17% higher than the October TMCs during the weekday morning peak hour. As such, the October TMCs at the intersection of Ferris Place and Clark Street and the intersection of Prospect Street and Ferris Place/Trader Joe's Driveway and the December TMCs at the intersection of North Avenue and Clark Street were grown to match the April 2022 TMC data during the weekday morning peak hour. It was determined that the April TMCs were approximately 8% lower than the October TMCs during the weekday evening peak hour. Therefore, no reduction or growth was applied to the TMCs during the weekday evening peak hour. It is noted that the April pedestrian counts at the intersection of Ferris Place and Clark Street were lower than the October pedestrian counts. As such, the October pedestrian counts were utilized to provide for a conservative analysis. The Technical Appendix contains a summary of the additional turning movement count data. The 2021 Existing weekday morning, weekday evening, and Saturday midday peak-hour volumes are summarized on appended **Figure 2**. The 2021 Existing weekday morning, weekday evening, and Saturday midday pedestrian peak-hour volumes are summarized on appended **Figure 3**.

2021 Existing Vehicle Gap Acceptance

Vehicular gap acceptance in the vicinity of the proposed development was observed and data was collected to determine local operator characteristics of the surrounding roadway network. Video recordings were conducted during peak traffic periods to capture turning movements at the intersection of North Avenue and Clark Street. Specifically, the data was collected on the following dates and during the following times:

- ◆ Wednesday, December 8, 2021, from 4:00 p.m. to 7:00 p.m.
- ◆ Thursday, December 9, 2021, from 7:00 a.m. to 9:00 a.m.
- ◆ Saturday, December 18, 2021, from 11:00 a.m. to 2:00 p.m.

The gap acceptance data was analyzed to identify the prevailing critical gap. The critical gap refers to the minimum time-gap in traffic that a motorist will accept in order to complete a turning movement. The critical gap was determined using the Raff method, which is provided within the Traffic Engineering Handbook, 7th Edition published by ITE, and is defined as “the gap for which number of accepted gaps shorter than it is equal to the number of rejected gaps longer than it.” For analysis using the Raff method, over 100 data points for left-turns and right-turns were collected.

Per the results of the gap acceptance analysis, left-turning vehicles require a critical gap of 4.4 seconds and right-turning vehicles require a critical gap of 4.3 seconds. These values were utilized within the capacity analyses for the North Avenue and Clark Street intersection herein.

2021 Existing LOS/Capacity Analysis

A Level of Service and Volume/Capacity analysis was conducted for the 2021 Existing Condition during the weekday morning, weekday evening, and Saturday midday peak hours at the study intersection. Under the existing condition, the approaches of the unsignalized intersection of Prospect Street, Ferris Place, and the Trader Joe's driveway are calculated to operate at Level of Service C or better during the weekday morning, weekday evening, and Saturday midday peak hours. Prospect Street did incur additional mid-block congestion as Trader Joe's customers utilized Prospect Street to recirculate looking for parking within the parking lot. The approaches of the unsignalized intersection of Prospect Street and Broad Street are calculated to operate at Level of Service D or better during the weekday morning and weekday evening peak hours, and at Level of Service E or better during the Saturday midday peak hour. At times, even during off peak hours, it was observed that loading along Prospect Street – often illegally on the southerly side of the street – caused an alternating traffic condition which caused backups and added congestion between Ferris Place and Broad Street. It is noted that it was observed that southbound Broad Street at times queued up to the Prospect Street intersection, with the queue extending north from the North Avenue intersection. However, drivers typically left the intersection clear for vehicles to turn from Broad Street northbound onto Prospect Street and turn from Prospect Street onto Broad Street. This was accounted for in calibrating the traffic analyses provided. Additionally, it should be noted that pedestrian observations at the intersection of Prospect Street and Broad Street observed an average of three (3) pedestrians crossing the intersection simultaneously. Pedestrians regularly crossed the legs of the intersection at the same time in groups of three (3) on average. As such, due to limitations in analyzing intersections with pedestrians in Synchro, the number of pedestrians observed crossing this intersection were divided into groups of three (3) pedestrians to better represent true conditions at the intersection. The approach of the unsignalized intersection of Ferris Place and Clark Street is calculated to operate at Level of Service B or better during the weekday morning, weekday evening, and Saturday midday peak hours. The approaches of the unsignalized intersection of North Avenue and Clark Street are calculated to operate at Level of Service C or better during the Saturday midday peak hour, and at Level of Service D or better during the weekday morning and weekday evening peak hours.

2024 NO-BUILD CONDITION

Background Growth

The 2021 Existing Condition traffic volume data was grown to a future horizon year of 2024, which is a conservative estimate for when the proposed mixed-use development is expected to be fully constructed. In accordance with industry guidelines, the existing traffic volumes at the study intersections were increased by 1.00% annually for three (3) years. The 1.00% background growth rate was obtained from the New Jersey Department of Transportation (NJDOT) Annual Background Growth Rate Table.

2024 No-Build Traffic Volumes

The background growth rate was applied to the 2021 Existing Traffic Volumes to calculate the 2024 No-Build Traffic Volumes and 2024 No-Build Pedestrian Volumes for the weekday morning, weekday evening, and Saturday midday peak hours. The 2024 No-Build traffic volumes are summarized on appended **Figure 4**, and the 2024 No-Build Pedestrian Volumes are summarized on appended **Figure 5**.

2024 No-Build LOS/Capacity Analysis

A Level of Service and Volume/Capacity analysis was also conducted for the 2024 No-Build Condition during the Saturday midday peak hour at the study intersection. The approaches of the unsignalized intersection of Prospect Street, Ferris Place, and the Trader Joe's driveway are calculated to operate generally consistent with the findings of the Existing Condition during the weekday morning, weekday evening, and Saturday midday peak hours. The approaches of the unsignalized intersection of Prospect Street and Broad Street are calculated to operate generally consistent with the findings of the Existing Condition during the weekday evening peak hour, to operate at Level of Service E or better during the weekday morning peak hour, and to operate under capacity constraints during the Saturday midday peak hour. The approach of the unsignalized intersection of Ferris Place and Clark Street is calculated to operate generally consistent with the findings of the Existing Condition during the weekday morning, weekday evening, and Saturday midday peak hours. The approaches of the unsignalized intersection of North Avenue and Clark Street are calculated to operate generally consistent with the findings of the Existing Condition during the weekday morning, weekday evening, and Saturday midday peak hours.

2024 BUILD CONDITION

The site-generated traffic volume of the proposed mixed-use development was estimated to identify the potential impacts of the project. For the purpose of this analysis, a complete project "build out" is assumed within two (2) years of the preparation of this study.

Trip Generation

Trip generation projections for the proposed mixed-use development were prepared utilizing the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition. Trip generation rates associated with Land Use 221 "Multifamily Housing (Mid-Rise)" and Land Use 822 "Strip Retail Plaza" were cited for the 60-unit residential building with 500 square-feet of retail space. **Table 2** provides the weekday morning, weekday evening, and Saturday midday trip generation volumes associated with the proposed development.

TABLE 2 – PROPOSED TRIP GENERATION

Land Use	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Saturday Midday Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
60-Unit Multifamily Housing (Mid-Rise) <i>ITE Land Use 221</i>	5	17	22	14	9	23	12	11	23
500 SF Strip Retail Plaza (<40k) <i>ITE Land Use 822</i>	1	0	1	2	1	3	2	1	3
Total	6	17	23	16	10	26	14	12	26

The proposed development is expected to generate 26 new trips during the critical weekday evening and Saturday midday peak hours. It is important to note that the proposed site driveway is located along Ferris Place which operates as a one (1)-way roadway. As such, all vehicles exiting the subject site would be traveling southbound along Ferris Place towards Clark Street and away from the intersection of Prospect Street and Trader Joe's driveway.

Additionally, pedestrian trip generation projections for the proposed mixed-use development were prepared utilizing the Institute of Transportation Engineers' (ITE) Trip Generation Supplement, 10th Edition. Trip generation rates associated with Land Use 231 "Mid-Rise Residential with 1st-Floor Commercial" was cited for the 60-unit residential building with 500 square-feet of retail space. **Table 3** provides the weekday morning, weekday evening, and Saturday midday pedestrian trip generation volumes associated with the proposed development.

TABLE 3 – PROPOSED TRIP GENERATION – PEDESTRIAN TRIPS

Land Use	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Saturday Midday Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
60-Unit Mid-Rise Residential with 1 st -Floor Commercial <i>ITE Land Use 231</i>	10	10	20	7	7	14	10	10	20

Trip Assignment/Distribution

The trips generated by the proposed development were distributed according to the existing travel pattern along the adjacent roadways and the access management plan of the site. The "New" Site-Generated Traffic Volumes are illustrated on **Figure 6**. The "New" Site-Generated Pedestrian Volumes are illustrated on **Figure 7**.

2024 Build Traffic Volumes

The site-generated trips were added to the 2024 No-Build Traffic Volumes to calculate the 2024 Build Traffic Volumes and are shown on appended **Figure 8**. The site-generated pedestrian volumes were added to the 2024 No-Build Pedestrian Volumes to calculate the 2024 Build Pedestrian Volumes and are shown on appended **Figure 9**.

2024 Build LOS/Capacity Analysis

A Level of Service and Volume/Capacity analysis was also conducted for the 2024 Build Condition during the weekday morning, weekday evening, and Saturday midday peak hours at the study intersection and proposed site driveway. It should be noted that an additional analysis was conducted at the request of the Town at the intersection of Prospect Street and Broad Street with eastbound left turns prohibited from Prospect Street onto Broad Street. **Tables 4 through 16** compare the Existing, No-Build, and Build Conditions Level of Service and delay values.

The approaches of the unsignalized intersection of Prospect Street, Ferris Place, and the Trader Joe's driveway are calculated to operate generally consistent with the findings of the No-Build Condition during the weekday morning and weekday evening peak hours, and to operate at Level of Service C or better during the Saturday midday peak hour. The approaches of the unsignalized intersection of Prospect Street and Broad Street are calculated to operate generally consistent with the findings of the No-Build Condition during the weekday morning and weekday evening peak hours, and to operate under capacity constraints during the Saturday midday peak hour. The development will not add any traffic to the Prospect Street approach, and vehicles on Prospect Street would still access Broad Street via vehicular gaps and courtesy gaps in traffic in the Build Condition. Additionally, in the 2024 Build Condition with eastbound left turns prohibited from Prospect Street onto Broad Street, the approaches of the unsignalized intersection of Prospect Street and Broad Street are calculated to operate generally consistent with the findings of the No-Build Condition during the weekday morning and weekday evening peak hours, and to operate at Level of Service D or better during the Saturday midday peak hour. It is noted that the eastbound approach of Prospect Street is calculated to improve to operate at Level of Service B during the weekday morning, weekday evening, and Saturday midday peak hours with eastbound left turns prohibited from Prospect Street onto Broad Street. The approach of the unsignalized intersection of Ferris Place and Clark Street is calculated to operate generally consistent with the findings of the No-Build Condition during the weekday morning, weekday evening, and Saturday midday peak hours. The approaches of the unsignalized intersection of North Avenue and Clark Street are calculated to operate generally consistent with the findings of the No-Build Condition during the weekday morning and Saturday midday peak hours, and to operate at Level of Service E or better during the weekday evening peak hour. As such, a gap analysis has been included to determine whether there is sufficient capacity for left and right turning vehicles provided by gaps in traffic created by upstream and downstream signalized intersections. The approach of the proposed unsignalized intersection of the site driveway and Ferris Place is calculated to operate at Level of Service A during the weekday morning, weekday evening, and Saturday midday peak hours.

Potential improvements to help reduce existing traffic concerns on the surrounding roadway network include creating internal circulation within the Trader Joe's parking lot for customers to recirculate while looking for parking, while allowing vehicles to enter and exit the parking lot from Prospect Street. Additionally, illegal parking and loading that causes backups and added congestion along nearby streets could be remedied by increasing enforcement throughout the area. It is noted that no exiting traffic from the proposed development travels through the intersection of Prospect Street, Ferris Place, and the Trader Joe's Driveway. Further, an on-street loading/drop-off/pick-up area is proposed along the site frontage to provide a proper and convenient loading area for vehicles to easily access the subject site without the need to double park along Ferris Place.

Additionally, it is noted that the proposed mixed-use development is expected to generate a minimal amount of increased traffic (about one (1) vehicle every five (5) minutes) through the Prospect Street and Broad Street intersection during the weekday evening peak hour. *The Westfield Bicycle and Pedestrian Plan*, dated November 2019, and *The Town of Westfield Unified Land Use and Circulation Element*, dated June 2021, outline potential improvements and suggest that this intersection may benefit from a traffic signal to better facilitate traffic flow and increase pedestrian safety. Under future Capital Improvement projects other potential improvements that would also be feasible could include bump outs, raised crosswalks/intersection, or operating the intersection under all-way stop control.

Comparative Level of Service (Delay) Tables

PROSPECT STREET, FERRIS PLACE, & TRADER JOE'S DRIVEWAY

EB (Eastbound) and WB (Westbound) approaches are the Prospect Street approaches

SB (Southbound) approach is the Trader Joe's driveway approach

X (n) = Level of Service (seconds of delay)

TABLE 4 – WEEKDAY MORNING PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build
EB Left/Through/Right	A (7.6)	A (7.6)	A (7.6)
WB Left/Through/Right	A (7.9)	A (7.9)	A (8.0)
SB Left	C (15.8)	C (16.2)	C (16.7)
SB Right	A (9.1)	A (9.1)	A (9.1)

TABLE 5 – WEEKDAY EVENING PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build
EB Left/Through/Right	A (7.7)	A (7.7)	A (7.7)
WB Left/Through/Right	A (7.5)	A (7.6)	A (7.6)
SB Left	B (13.8)	B (14.2)	B (14.9)
SB Right	A (9.1)	A (9.2)	A (9.2)

TABLE 6 – SATURDAY MIDDAY PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build
EB Left/Through/Right	A (7.8)	A (7.8)	A (7.8)
WB Left/Through/Right	A (7.5)	A (7.5)	A (7.6)
SB Left	B (14.1)	B (14.5)	C (15.2)
SB Right	A (9.4)	A (9.4)	A (9.4)

PROSPECT STREET & BROAD STREET

EB (Eastbound) and WB (Westbound) approaches are the Prospect Street approaches
NB (Northbound) and SB (Southbound) approaches are the Broad Street approaches
X (n) = Level of Service (seconds of delay)

TABLE 7 – WEEKDAY MORNING PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build	2024 Build (No Left)
EB Left/Right	C (24.8)	D (27.7)	D (29.3)	B (12.0)
WB Left/Through/Right	D (34.5)	E (37.4)	E (38.8)	E (39.5)
NB Left	A (8.7)	A (8.8)	A (8.8)	A (8.8)

TABLE 8 – WEEKDAY EVENING PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build	2024 Build (No Left)
EB Left/Right	C (21.2)	C (23.0)	C (24.2)	B (12.8)
WB Left/Through/Right	D (27.5)	D (29.6)	D (31.1)	D (32.1)
NB Left	A (8.8)	A (8.9)	A (8.9)	A (8.9)

TABLE 9 – SATURDAY MIDDAY PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build	2024 Build (No Left)
EB Left/Right	E (43.2)	F (52.6)	F (62.3)	B (13.5)
WB Left/Through/Right	D (26.6)	D (28.6)	D (30.3)	D (32.4)
NB Left	A (8.9)	A (9.0)	A (9.1)	A (9.1)

FERRIS PLACE & CLARK STREET

SB (Southbound) approach is the Ferris Place approach
X (n) = Level of Service (seconds of delay)

TABLE 10 – WEEKDAY MORNING PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build
SB Left/Right	B (11.8)	B (12.0)	B (12.4)

TABLE 11 – WEEKDAY EVENING PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build
SB Left/Right	B (11.6)	B (11.8)	B (12.0)

TABLE 12 – SATURDAY MIDDAY PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build
SB Left/Right	B (10.6)	B (10.7)	B (10.8)

NORTH AVENUE & CLARK STREET

EB (Eastbound) approach is the Clark Street approach
NB (Northbound) approach is the North Avenue approach
X (n) = Level of Service (seconds of delay)

TABLE 13 – WEEKDAY MORNING PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build
EB Left	D (27.7)	D (30.3)	D (31.9)
EB Right	B (10.4)	B (10.5)	B (10.5)
NB Left	A (9.1)	A (9.1)	A (9.1)

TABLE 14 – WEEKDAY EVENING PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build
EB Left	D (31.7)	D (35.6)	E (37.0)
EB Right	B (11.3)	B (11.4)	B (11.4)
NB Left	A (9.5)	A (9.6)	A (9.6)

TABLE 15 – SATURDAY MIDDAY PEAK HOUR

Lane Group	2021 Existing	2024 No-Build	2024 Build
EB Left	C (18.7)	C (19.6)	C (20.0)
EB Right	B (10.3)	B (10.4)	B (10.4)
NB Left	A (8.8)	A (8.9)	A (8.9)

FERRIS PLACE & PROPOSED DRIVEWAY

EB (Eastbound) approach is the proposed driveway approach
X (n) = Level of Service (seconds of delay)

TABLE 16 – 2024 BUILD CONDITION

Lane Group	Weekday Morning Peak Hour	Weekday Evening Peak Hour	Saturday Midday Peak Hour
EB Right	A (9.3)	A (8.8)	A (8.6)

Signal Warrant Analysis

A signal warrant analysis was conducted to in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) procedures at the intersection of Prospect Street and Broad Street. Five (5) hours of turning movement counts at the intersection of Prospect Street and Broad Street were adjusted to 12-hour counts using NJDOT 48-Hour Automatic Traffic Recorder (ATR) counts. 48-hour ATR counts collected from Monday, April 8, 2019 to Thursday, April 11, 2019 along Broad Street between Central Avenue and Mountain Avenue were utilized to adjust the five (5) hours of TMCs. The ATR counts and data adjustments are provided within the Technical Appendix. Based on a review of the crash data from 2017-2019, it was determined that there were three (3) crashes in a 12-month period at the intersection of Prospect Street and Broad Street susceptible to correction by a traffic control signal. The traffic volume thresholds for Warrant 1 and Warrant 2 are satisfied. As such, it was determined that this intersection does meet the warrant criteria/minimum thresholds for signalization. The results of the signal warrant analysis are provided within the Technical Appendix.

Multi-Way Stop Control Analysis

The intersection of Prospect Street and Broad Street was evaluated to determine if it meets warrant criteria to be signed as a multi-way stop intersection (i.e. “all-way” stop) based on the *Multi-Way Stop Applications* Section 2B.07 of MUTCD, which defines minimum volumes of each approach for a multi-way stop intersection. The minimum requirements are as follows:

- A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.
- B. Five (5) or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.
- C. Minimum Volumes:
 - 1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and
 - 2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street traffic of at least 30 seconds per vehicle during the highest hour; but
 - 3. If the 85th percentile approach speed of the major street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.
- D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Based on a review of the crash data from 2017-2019, it was determined that there were less than three (3) crashes per year at the intersection of Prospect Street and Broad Street susceptible to correction by a multi-way stop installation. The traffic counts at the intersection of Prospect Street and Broad Street meet the warrant criteria. As such, the intersection does meet the warrant criteria or minimum thresholds required for the intersection to be signed as a multi-way stop intersection.

2024 Build Gap Analysis

As part of the turning movement counts, an analysis of existing gaps in traffic along North Avenue proximate to the intersection of North Avenue and Clark Street was performed. Vehicular gaps in northbound and southbound traffic along North Avenue were recorded during the weekday morning, weekday evening, and Saturday midday peak hours to evaluate existing vehicular headway conditions and determine if there is adequate capacity to accommodate left- and right-turn movements from Clark Street. Specifically, the peak hours studied within the analysis were the same as the network peak hours.

The data was analyzed using minimum gap acceptance rates determined by field observations. An available gap, or critical headway, represents the minimum time interval between oncoming vehicles that motorists will accept in order to execute a turning movement. **Table 17** provides the base critical headway and base follow-up headway for a left-turn and right-turn from a minor street that was utilized in the analysis.

TABLE 17 – BASE CRITICAL HEADWAY AND BASE FOLLOW-UP HEADWAY

Turning Movement	Base Critical Headway	Base Follow-up Headway
Left-turn from Minor Street	4.4 seconds	3.5 seconds
Right-turn from Minor Street	4.3 seconds	3.3 seconds

The total number and duration of the existing gaps in North Avenue traffic were evaluated in terms of the minimum gap acceptance and follow-up times. **Table 18** provides the total vehicle capacity for the left- and right-turns from Clark Street and the proposed vehicular volumes for the 2024 Build Condition. A full breakdown of the gap data is provided within the Technical Appendix.

TABLE 18 – PROPOSED CLARK STREET VOLUME VS. TOTAL CAPACITY

Movement	Peak Hour	Total Capacity (Vehicles)	Proposed Vehicle Volume (Vehicles)
Left-turn from Clark Street	Weekday Morning Peak Hour	414	200
	Weekday Evening Peak Hour	429	234
	Saturday Midday Peak Hour	464	163
Right-turn from Clark Street	Weekday Morning Peak Hour	426	11
	Weekday Evening Peak Hour	445	36
	Saturday Midday Peak Hour	471	35

As shown in Table 18, there is sufficient capacity and a sufficient number of gaps in North Avenue traffic to accommodate the anticipated volume at Clark Street during the study peak hours. Furthermore, this analysis represents peak conditions and, as such, it is expected that there would be additional capacity during off-peak time periods. The results of the gap analysis indicate that there are sufficient gaps in traffic created by the signalized intersections upstream and downstream to accommodate the volume of traffic through the intersection.

Site Circulation/Parking Supply

A review was conducted of the proposed mixed-use development using the Site Plan prepared by our office. In completing this review, particular attention was focused on the site access, circulation, and parking supply.

Access is proposed via one (1) right-in/right-out driveway along Ferris Place. The proposed four (4)-story mixed-use building with a basement-level parking garage would be located in the center portion of the property. The 500 square-feet of retail space would be located in the easterly portion of the site with access along Prospect Street. Two (2)-way vehicular circulation throughout the site would be facilitated via minimum 24-foot-wide drive aisles. The trash room would be located in the southeasterly portion of the site with access via the parking garage. In accordance with the Sophia Redevelopment Plan, one (1) on-street loading zone with bump out would be provided along the northerly side of Ferris Place near the intersection of Prospect Street and Ferris Place. This loading zone would be utilized by rideshare options, Wonder Truck, Amazon, and other vehicles to easily access the subject site without the need to double park along Ferris Place.

Regarding the parking requirements for the proposed development, the Sophia Redevelopment Plan requires 1.5 spaces per multi-family residential unit and zero (0) spaces for retail spaces less than 1,000 square feet. For the proposed 60-unit development with 500 square-feet of retail space, this equates to 90 required spaces. The site would provide 96 total parking spaces, inclusive of 29 compact spaces, six (6) electric vehicle charging spaces, nine (9) electric vehicle ready spaces, and two (2) ADA accessible parking spaces, which meets the parking requirement and would be sufficient to support this project's demand. The spaces would be a

minimum of 8.5 feet wide by 18 feet deep in accordance with the Sophia Redevelopment Plan and industry standard. Additionally, the Sophia Redevelopment Plan requires one (1) bicycle parking space per residential unit. For the proposed 60-unit development, this equates to 60 bicycle parking spaces. The proposed development would provide bicycle rack storage for 64 bicycles located in the westerly portion of the parking garage, which meets the bicycle parking requirement.

The parking supply was evaluated with respect to data published within the ITE's Parking Generation, 5th Edition, for Land Use 221 "Multifamily Housing (Mid-Rise)" and Land Use 820 "Shopping Center." Specifically, parking generation rates for "General Urban/Suburban" were utilized. The 85th percentile parking demand rate during the peak weekday evening period is 0.86 vehicles per bedroom and 3.68 vehicles per 1,000 square feet of retail space. For the proposed 88-bedroom residential building and 500 square-feet of retail space, this equates to 78 parking spaces. As such, the proposed parking supply of 96 spaces would be sufficient to support the parking demand of the site.

Based on nearby transit options for the site's residents, ITE Journal article research, published ITE parking demand rates, and the Sophia Redevelopment Plan, the proposed parking supply of 96 spaces would be sufficient to support the expected parking demand of the proposed development. Additionally, the site's proximity to Downtown Westfield's services and retail shops, NJ Transit bus stops, and the Westfield Train Station would support future growth without the impact of additional vehicle trips. The addition of the bump out near the intersection of Prospect Street and Ferris Place along with new streetscape would enhance the non-vehicular (pedestrian, bicyclist) experience.

Conclusions

This report was prepared to examine the potential traffic impact of the proposed mixed-use development. The analysis findings, which have been based on industry standard guidelines, indicate that the proposed development would not have a significant impact on the traffic operations of the adjacent roadway network. Future capital improvements outlined in municipal planning documents would enhance the experience for all members of the community and would be feasible with the volume of traffic proposed in this development. The site driveways and on-site layout have been designed to provide for effective access to and from the subject property. Based on industry data and local characteristics of the site and surrounding area, the parking supply would be sufficient to support this project.

Please do not hesitate to contact our office if there are any questions.

Best regards,



Matthew J. Seckler, PE, PP, PTOE
Stonefield Engineering and Design, LLC

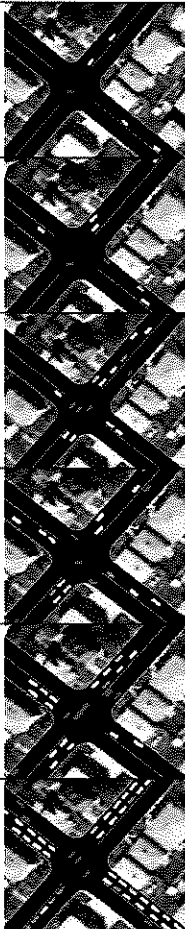
TECHNICAL APPENDIX

LEVEL OF SERVICE/AVERAGE CONTROL DELAY CRITERIA

LEVEL OF SERVICE /AVERAGE CONTROL DELAY CRITERIA

The ability of a roadway to effectively accommodate traffic demand is determined through an assessment of the volume-to-capacity ratio, delay and Level of Service of the lane group and/or intersection. The volume-to-capacity ratio is the ratio of traffic flow rate to capacity for a given transportation facility. As defined within the Highway Capacity Manual, 6th Edition (HCM), intersection delay is the total additional travel time experienced by drivers, passengers, or pedestrians as a result of control measures and interaction with other users of the facility, divided by the volume departing from the corresponding cross section of the facility. Level of service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience.

For an unsignalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle. For a signalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle and LOS F denotes operations with delay in excess of 80 seconds per vehicle.

	Level Of Service (LOS)	Signalized Delay Range (average control delay in sec/veh)	Unsignalized Delay Range (average control delay in sec/veh)
	A	≤ 10	≤ 10
	B	> 10 and ≤ 20	> 10 and ≤ 15
	C	> 20 and ≤ 35	> 15 and ≤ 25
	D	> 35 and ≤ 55	> 25 and ≤ 35
	E	> 55 and ≤ 80	> 35 and ≤ 50
	F	> 80	> 50

Source: Highway Capacity Manual, 6th Edition

TURNING MOVEMENT COUNT DATA

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Prospect Street (E/W)
and Broad Street (N/S)
Westfield, Union County, New Jersey
Saturday, October 16, 2021

File Name : PRI-210151_SAT_01_OCT

Site Code : 00210151

Start Date : 10/16/2021

Page No : 1

Groups Printed- Auto - HV - B/SB

	Prospect Street Eastbound				Prospect Street Westbound				Broad Street Northbound				Broad Street Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
11:00 AM	10	0	30	40	5	11	13	29	22	94	0	116	0	78	20	98	283
11:15 AM	11	0	37	48	0	9	15	24	31	92	0	123	0	81	15	96	291
11:30 AM	11	0	30	41	2	4	15	21	24	84	0	108	0	83	14	97	267
11:45 AM	6	0	29	35	6	12	17	35	33	108	1	142	0	97	14	111	323
Total	38	0	126	164	13	36	60	109	110	378	1	489	0	339	63	402	1164
12:00 PM	23	0	30	53	0	6	16	22	27	95	0	122	0	79	19	98	295
12:15 PM	12	0	32	44	2	11	26	39	44	95	0	139	0	62	23	85	307
12:30 PM	10	0	36	46	7	10	10	27	37	83	0	120	0	108	19	127	320
12:45 PM	6	0	32	38	5	13	14	32	29	82	0	111	0	75	8	83	264
Total	51	0	130	181	14	40	66	120	137	355	0	492	0	324	69	393	1186
01:00 PM	10	0	46	56	3	6	9	18	23	81	0	104	0	84	18	102	280
01:15 PM	7	0	38	45	3	7	7	17	36	87	0	123	0	83	12	95	280
01:30 PM	11	0	36	47	4	12	11	27	35	59	0	94	0	87	17	104	272
01:45 PM	15	0	33	48	3	9	15	27	28	74	0	102	0	82	18	100	277
Total	43	0	153	196	13	34	42	89	122	301	0	423	0	336	65	401	1109
Grand Total	132	0	409	541	40	110	168	318	369	1034	1	1404	0	999	197	1196	3459
Apprch %	24.4	0	75.6		12.6	34.6	52.8		26.3	73.6	0.1		0	83.5	16.5		
Total %	3.8	0	11.8	15.6	1.2	3.2	4.9	9.2	10.7	29.9	0	40.6	0	28.9	5.7	34.6	
Auto	131	0	406	537	40	108	167	315	367	1016	1	1384	0	986	195	1181	3417
% Auto	99.2	0	99.3	99.3	100	98.2	99.4	99.1	99.5	98.3	100	98.6	0	98.7	99	98.7	98.8
HV	1	0	3	4	0	2	1	3	2	13	0	15	0	9	2	11	33
% HV	0.8	0	0.7	0.7	0	1.8	0.6	0.9	0.5	1.3	0	1.1	0	0.9	1	0.9	1
B/SB	0	0	0	0	0	0	0	0	0	5	0	5	0	4	0	4	9
% B/SB	0	0	0	0	0	0	0	0	0	0.5	0	0.4	0	0.4	0	0.3	0.3

	Prospect Street Eastbound				Prospect Street Westbound				Broad Street Northbound				Broad Street Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	6	0	29	35	6	12	17	35	33	108	1	142	0	97	14	111	323
12:00 PM	23	0	30	53	0	6	16	22	27	95	0	122	0	79	19	98	295
12:15 PM	12	0	32	44	2	11	26	39	44	95	0	139	0	62	23	85	307
12:30 PM	10	0	36	46	7	10	10	27	37	83	0	120	0	108	19	127	320
Total Volume	51	0	127	178	15	39	69	123	141	381	1	523	0	346	75	421	1245
% App. Total	28.7	0	71.3		12.2	31.7	56.1		27	72.8	0.2		0	82.2	17.8		
PHF	.554	.000	.882	.840	.536	.813	.663	.788	.801	.882	.250	.921	.000	.801	.815	.829	.964
Auto	51	0	126	177	15	38	69	122	140	379	1	520	0	340	73	413	1232
% Auto	100	0	99.2	99.4	100	97.4	100	99.2	99.3	99.5	100	99.4	0	98.3	97.3	98.1	99.0
HV	0	0	1	1	0	1	0	1	1	1	0	2	0	5	2	7	11
% HV	0	0	0.8	0.6	0	2.6	0	0.8	0.7	0.3	0	0.4	0	1.4	2.7	1.7	0.9
B/SB	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
% B/SB	0	0	0	0	0	0	0	0	0	0.3	0	0.2	0	0.3	0	0.2	0.2

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Clark Street (E/W)
and Ferris Place (N/S)
Westfield, Union County, New Jersey
Saturday, October 16, 2021

File Name : PRI-210151_SAT_03_OCT

Site Code : 00210151

Start Date : 10/16/2021

Page No : 1

Groups Printed- Auto - HV - B/SB

	Clark Street Eastbound				Clark Street Westbound				Ferris Place Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
11:00 AM	0	38	0	38	0	38	0	38	8	0	4	12	88
11:15 AM	0	24	0	24	0	36	0	36	8	0	3	11	71
11:30 AM	0	29	0	29	0	37	0	37	4	0	4	8	74
11:45 AM	0	47	0	47	0	38	0	38	11	0	6	17	102
Total	0	138	0	138	0	149	0	149	31	0	17	48	335
12:00 PM	0	50	0	50	0	45	0	45	6	0	3	9	104
12:15 PM	0	44	0	44	0	43	0	43	6	0	6	12	99
12:30 PM	0	38	0	38	0	36	0	36	18	0	6	24	98
12:45 PM	0	26	0	26	0	46	0	46	10	0	3	13	85
Total	0	158	0	158	0	170	0	170	40	0	18	58	386
01:00 PM	0	33	0	33	0	44	0	44	5	0	3	8	85
01:15 PM	0	42	0	42	0	48	0	48	10	0	3	13	103
01:30 PM	0	42	0	42	0	44	0	44	7	0	4	11	97
01:45 PM	0	42	0	42	0	38	0	38	13	0	3	16	96
Total	0	159	0	159	0	174	0	174	35	0	13	48	381
Grand Total	0	455	0	455	0	493	0	493	106	0	48	154	1102
Apprch %	0	100	0		0	100	0		68.8	0	31.2		
Total %	0	41.3	0	41.3	0	44.7	0	44.7	9.6	0	4.4	14	
Auto	0	446	0	446	0	477	0	477	104	0	45	149	1072
% Auto	0	98	0	98	0	96.8	0	96.8	98.1	0	93.8	96.8	97.3
HV	0	9	0	9	0	15	0	15	2	0	3	5	29
% HV	0	2	0	2	0	3	0	3	1.9	0	6.2	3.2	2.6
B/SB	0	0	0	0	0	1	0	1	0	0	0	0	1
% B/SB	0	0	0	0	0	0.2	0	0.2	0	0	0	0	0.1

	Clark Street Eastbound				Clark Street Westbound				Ferris Place Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:45 AM													
11:45 AM	0	47	0	47	0	38	0	38	11	0	6	17	102
12:00 PM	0	50	0	50	0	45	0	45	6	0	3	9	104
12:15 PM	0	44	0	44	0	43	0	43	6	0	6	12	99
12:30 PM	0	38	0	38	0	36	0	36	18	0	6	24	98
Total Volume	0	179	0	179	0	162	0	162	41	0	21	62	403
% App. Total	0	100	0		0	100	0		66.1	0	33.9		
PHF	.000	.895	.000	.895	.000	.900	.000	.900	.569	.000	.875	.646	.969
Auto	0	177	0	177	0	154	0	154	39	0	20	59	390
% Auto	0	98.9	0	98.9	0	95.1	0	95.1	95.1	0	95.2	95.2	96.8
HV	0	2	0	2	0	7	0	7	2	0	1	3	12
% HV	0	1.1	0	1.1	0	4.3	0	4.3	4.9	0	4.8	4.8	3.0
B/SB	0	0	0	0	0	1	0	1	0	0	0	0	1
% B/SB	0	0	0	0	0	0.6	0	0.6	0	0	0	0	0.2

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Prospect Street (E/W)
and Ferris Place (N/S)
Westfield, Union County, New Jersey
Saturday, October 16, 2021

File Name : PRI-210151_SAT_02_OCT
Site Code : 00210151
Start Date : 10/16/2021
Page No : 1

Groups Printed- Auto - HV - B/SB

	Prospect Street Eastbound				Prospect Street Westbound				Ferris Place Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
11:00 AM	15	17	3	35	2	30	9	41	19	0	5	24	100
11:15 AM	11	24	8	43	6	33	12	51	17	0	6	23	117
11:30 AM	10	27	1	38	7	25	6	38	10	0	3	13	89
11:45 AM	11	27	6	44	9	35	6	50	20	0	6	26	120
Total	47	95	18	160	24	123	33	180	66	0	20	86	426
12:00 PM	11	25	6	42	2	35	9	46	17	0	6	23	111
12:15 PM	9	20	4	33	10	39	13	62	24	0	4	28	123
12:30 PM	16	27	4	47	15	33	4	52	23	0	5	28	127
12:45 PM	18	21	7	46	6	30	10	46	26	0	9	35	127
Total	54	93	21	168	33	137	36	206	90	0	24	114	488
01:00 PM	9	21	5	35	6	25	12	43	18	0	5	23	101
01:15 PM	8	13	4	25	5	36	10	51	15	0	6	21	97
01:30 PM	15	16	3	34	10	26	11	47	28	0	6	34	115
01:45 PM	13	20	9	42	9	37	12	58	21	0	7	28	128
Total	45	70	21	136	30	124	45	199	82	0	24	106	441
Grand Total	146	258	60	464	87	384	114	585	238	0	68	306	1355
Apprch %	31.5	55.6	12.9		14.9	65.6	19.5		77.8	0	22.2		
Total %	10.8	19	4.4	34.2	6.4	28.3	8.4	43.2	17.6	0	5	22.6	
Auto	146	257	56	459	87	381	114	582	238	0	68	306	1347
% Auto	100	99.6	93.3	98.9	100	99.2	100	99.5	100	0	100	100	99.4
HV	0	1	4	5	0	3	0	3	0	0	0	0	8
% HV	0	0.4	6.7	1.1	0	0.8	0	0.5	0	0	0	0	0.6
B/SB	0	0	0	0	0	0	0	0	0	0	0	0	0
% B/SB	0	0	0	0	0	0	0	0	0	0	0	0	0

	Prospect Street Eastbound				Prospect Street Westbound				Ferris Place Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:45 AM to 12:30 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:45 AM													
11:45 AM	11	27	6	44	9	35	6	50	20	0	6	26	120
12:00 PM	11	25	6	42	2	35	9	46	17	0	6	23	111
12:15 PM	9	20	4	33	10	39	13	62	24	0	4	28	123
12:30 PM	16	27	4	47	15	33	4	52	23	0	5	28	127
Total Volume	47	99	20	166	36	142	32	210	84	0	21	105	481
% App. Total	28.3	59.6	12		17.1	67.6	15.2		80	0	20		
PHF	.734	.917	.833	.883	.600	.910	.615	.847	.875	.000	.875	.938	.947
Auto	47	99	17	163	36	140	32	208	84	0	21	105	476
% Auto	100	100	85.0	98.2	100	98.6	100	99.0	100	0	100	100	99.0
HV	0	0	3	3	0	2	0	2	0	0	0	0	5
% HV	0	0	15.0	1.8	0	1.4	0	1.0	0	0	0	0	1.0
B/SB	0	0	0	0	0	0	0	0	0	0	0	0	0
% B/SB	0	0	0	0	0	0	0	0	0	0	0	0	0

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Prospect Street (E/W)
and Broad Street (N/S)
Westfield, Union County, New Jersey
Thursday, October 21, 2021

File Name : PRI-210151.01_OCT
Site Code : 00210151
Start Date : 10/21/2021
Page No : 1

Groups Printed- Auto - HV - B/SB

Start Time	Prospect Street Eastbound				Prospect Street Westbound				Broad Street Northbound				Broad Street Southbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	24	24	2	4	5	11	5	73	0	78	0	75	3	78	191
07:15 AM	1	0	23	24	0	2	4	6	17	123	0	140	0	112	7	119	289
07:30 AM	1	0	9	10	2	6	8	16	16	145	0	161	0	93	8	101	288
07:45 AM	3	0	20	23	2	4	6	12	17	128	0	145	0	104	5	109	289
Total	5	0	76	81	6	16	23	45	55	469	0	524	0	384	23	407	1057
08:00 AM	3	0	29	32	2	4	4	10	26	156	0	182	0	116	6	122	346
08:15 AM	8	0	19	27	1	8	2	11	36	140	0	176	0	82	6	88	302
08:30 AM	7	0	19	26	0	13	4	17	20	133	0	153	0	90	10	100	296
08:45 AM	8	0	16	24	5	11	9	25	40	137	0	177	0	83	24	107	333
Total	26	0	83	109	8	36	19	63	122	566	0	688	0	371	46	417	1277
*** BREAK ***																	
04:00 PM	11	0	16	27	3	13	9	25	28	100	0	128	0	94	17	111	291
04:15 PM	11	0	26	37	2	5	10	17	16	106	0	122	0	107	15	122	298
04:30 PM	3	1	27	31	1	5	9	15	35	106	0	141	0	95	17	112	299
04:45 PM	12	0	30	42	4	11	7	22	34	96	0	130	0	118	7	125	319
Total	37	1	99	137	10	34	35	79	113	408	0	521	0	414	56	470	1207
05:00 PM	4	0	30	34	4	9	16	29	38	123	0	161	0	94	10	104	328
05:15 PM	7	0	34	41	3	5	15	23	25	112	0	137	0	104	18	122	323
05:30 PM	2	0	23	25	5	14	14	33	24	122	0	146	0	110	14	124	328
05:45 PM	8	0	37	45	3	21	20	44	37	109	0	146	0	89	19	108	343
Total	21	0	124	145	15	49	65	129	124	466	0	590	0	397	61	458	1322
06:00 PM	11	0	31	42	2	10	15	27	19	97	0	116	0	100	28	128	313
06:15 PM	10	0	26	36	1	9	17	27	35	102	0	137	0	99	25	124	324
06:30 PM	5	0	30	35	3	7	14	24	24	105	0	129	0	83	18	101	289
06:45 PM	6	0	28	34	4	11	20	35	22	96	0	118	0	89	17	106	293
Total	32	0	115	147	10	37	66	113	100	400	0	500	0	371	88	459	1219
Grand Total	121	1	497	619	49	172	208	429	514	2309	0	2823	0	1937	274	2211	6082
Apprch %	19.5	0.2	80.3		11.4	40.1	48.5		18.2	81.8	0		0	87.6	12.4		
Total %	2	0	8.2	10.2	0.8	2.8	3.4	7.1	8.5	38	0	46.4	0	31.8	4.5	36.4	
Auto	117	1	493	611	49	166	207	422	509	2242	0	2751	0	1868	272	2140	5924
% Auto	96.7	100	99.2	98.7	100	96.5	99.5	98.4	99	97.1	0	97.4	0	96.4	99.3	96.8	97.4
HV	3	0	4	7	0	5	1	6	2	37	0	39	0	34	1	35	87
% HV	2.5	0	0.8	1.1	0	2.9	0.5	1.4	0.4	1.6	0	1.4	0	1.8	0.4	1.6	1.4
B/SB	1	0	0	1	0	1	0	1	3	30	0	33	0	35	1	36	71
% B/SB	0.8	0	0	0.2	0	0.6	0	0.2	0.6	1.3	0	1.2	0	1.8	0.4	1.6	1.2

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Prospect Street (E/W)
and Broad Street (N/S)
Westfield, Union County, New Jersey
Thursday, October 21, 2021

File Name : PRI-210151.01_OCT
Site Code : 00210151
Start Date : 10/21/2021
Page No : 2

	Prospect Street Eastbound				Prospect Street Westbound				Broad Street Northbound				Broad Street Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

08:00 AM	3	0	29	32	2	4	4	10	26	156	0	182	0	116	6	122	346
08:15 AM	8	0	19	27	1	8	2	11	36	140	0	176	0	82	6	88	302
08:30 AM	7	0	19	26	0	13	4	17	20	133	0	153	0	90	10	100	296
08:45 AM	8	0	16	24	5	11	9	25	40	137	0	177	0	83	24	107	333
Total Volume	26	0	83	109	8	36	19	63	122	566	0	688	0	371	46	417	1277
% App. Total	23.9	0	76.1		12.7	57.1	30.2		17.7	82.3	0		0	89	11		
PHF	.813	.000	.716	.852	.400	.692	.528	.630	.763	.907	.000	.945	.000	.800	.479	.855	.923
Auto	25	0	82	107	8	33	19	60	119	547	0	666	0	346	45	391	1224
% Auto	96.2	0	98.8	98.2	100	91.7	100	95.2	97.5	96.6	0	96.8	0	93.3	97.8	93.8	95.8
HV	0	0	1	1	0	2	0	2	1	11	0	12	0	13	1	14	29
% HV	0	0	1.2	0.9	0	5.6	0	3.2	0.8	1.9	0	1.7	0	3.5	2.2	3.4	2.3
B/SB	1	0	0	1	0	1	0	1	2	8	0	10	0	12	0	12	24
% B/SB	3.8	0	0	0.9	0	2.8	0	1.6	1.6	1.4	0	1.5	0	3.2	0	2.9	1.9

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

04:45 PM	12	0	30	42	4	11	7	22	34	96	0	130	0	118	7	125	319
05:00 PM	4	0	30	34	4	9	16	29	38	123	0	161	0	94	10	104	328
05:15 PM	7	0	34	41	3	5	15	23	25	112	0	137	0	104	18	122	323
05:30 PM	2	0	23	25	5	14	14	33	24	122	0	146	0	110	14	124	328
Total Volume	25	0	117	142	16	39	52	107	121	453	0	574	0	426	49	475	1298
% App. Total	17.6	0	82.4		15	36.4	48.6		21.1	78.9	0		0	89.7	10.3		
PHF	.521	.000	.860	.845	.800	.696	.813	.811	.796	.921	.000	.891	.000	.903	.681	.950	.989
Auto	24	0	117	141	16	38	51	105	120	441	0	561	0	416	49	465	1272
% Auto	96.0	0	100	99.3	100	97.4	98.1	98.1	99.2	97.4	0	97.7	0	97.7	100	97.9	98.0
HV	1	0	0	1	0	1	1	2	1	9	0	10	0	8	0	8	21
% HV	4.0	0	0	0.7	0	2.6	1.9	1.9	0.8	2.0	0	1.7	0	1.9	0	1.7	1.6
B/SB	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2	5
% B/SB	0	0	0	0	0	0	0	0	0	0.7	0	0.5	0	0.5	0	0.4	0.4

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Clark Street (E/W)
and Ferris Place (N/S)
Westfield, Union County, New Jersey
Thursday, October 21, 2021

File Name : PRI-210151.03_OCT

Site Code : 00210151

Start Date : 10/21/2021

Page No : 1

Groups Printed- Auto - HV - B/SB

Start Time	Clark Street Eastbound				Clark Street Westbound				Ferris Place Southbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	44	0	44	0	46	0	46	4	0	2	6	96
07:15 AM	0	47	0	47	0	43	0	43	5	0	3	8	98
07:30 AM	0	30	0	30	0	41	0	41	4	0	3	7	78
07:45 AM	0	28	0	28	0	64	0	64	7	0	1	8	100
Total	0	149	0	149	0	194	0	194	20	0	9	29	372
08:00 AM	0	48	0	48	0	66	0	66	4	0	10	14	128
08:15 AM	0	17	0	17	0	26	0	26	2	0	7	9	52
08:30 AM	0	47	0	47	0	26	0	26	14	0	7	21	94
08:45 AM	0	28	0	28	0	32	0	32	15	0	13	28	88
Total	0	140	0	140	0	150	0	150	35	0	37	72	362
*** BREAK ***													
04:00 PM	0	35	0	35	0	48	0	48	4	0	4	8	91
04:15 PM	0	41	0	41	0	39	0	39	13	0	6	19	99
04:30 PM	0	49	0	49	0	45	0	45	12	0	7	19	113
04:45 PM	0	50	0	50	0	62	0	62	20	0	10	30	142
Total	0	175	0	175	0	194	0	194	49	0	27	76	445
05:00 PM	0	52	0	52	0	45	0	45	13	0	12	25	122
05:15 PM	0	49	0	49	0	44	0	44	9	0	6	15	108
05:30 PM	0	37	0	37	0	46	0	46	9	0	10	19	102
05:45 PM	0	29	0	29	0	45	0	45	15	0	12	27	101
Total	0	167	0	167	0	180	0	180	46	0	40	86	433
06:00 PM	0	42	0	42	0	45	0	45	18	0	8	26	113
06:15 PM	0	52	0	52	0	30	0	30	10	0	6	16	98
06:30 PM	0	32	0	32	0	46	0	46	4	0	2	6	84
06:45 PM	0	31	0	31	0	35	0	35	10	0	2	12	78
Total	0	157	0	157	0	156	0	156	42	0	18	60	373
Grand Total	0	788	0	788	0	874	0	874	192	0	131	323	1985
Apprch %	0	100	0		0	100	0		59.4	0	40.6		
Total %	0	39.7	0	39.7	0	44	0	44	9.7	0	6.6	16.3	
Auto	0	781	0	781	0	861	0	861	190	0	131	321	1963
% Auto	0	99.1	0	99.1	0	98.5	0	98.5	99	0	100	99.4	98.9
HV	0	6	0	6	0	9	0	9	2	0	0	2	17
% HV	0	0.8	0	0.8	0	1	0	1	1	0	0	0.6	0.9
B/SB	0	1	0	1	0	4	0	4	0	0	0	0	5
% B/SB	0	0.1	0	0.1	0	0.5	0	0.5	0	0	0	0	0.3

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Clark Street (E/W)
and Ferris Place (N/S)
Westfield, Union County, New Jersey
Thursday, October 21, 2021

File Name : PRI-210151.03_OCT

Site Code : 00210151

Start Date : 10/21/2021

Page No : 2

	Clark Street Eastbound				Clark Street Westbound				Ferris Place Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

08:00 AM	0	48	0	48	0	66	0	66	4	0	10	14	128
08:15 AM	0	17	0	17	0	26	0	26	2	0	7	9	52
08:30 AM	0	47	0	47	0	26	0	26	14	0	7	21	94
08:45 AM	0	28	0	28	0	32	0	32	15	0	13	28	88
Total Volume	0	140	0	140	0	150	0	150	35	0	37	72	362
% App. Total	0	100	0		0	100	0		48.6	0	51.4		
PHF	.000	.729	.000	.729	.000	.568	.000	.568	.583	.000	.712	.643	.707
Auto	0	138	0	138	0	146	0	146	33	0	37	70	354
% Auto	0	98.6	0	98.6	0	97.3	0	97.3	94.3	0	100	97.2	97.8
HV	0	1	0	1	0	1	0	1	2	0	0	2	4
% HV	0	0.7	0	0.7	0	0.7	0	0.7	5.7	0	0	2.8	1.1
B/SB	0	1	0	1	0	3	0	3	0	0	0	0	4
% B/SB	0	0.7	0	0.7	0	2.0	0	2.0	0	0	0	0	1.1

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

04:45 PM	0	50	0	50	0	62	0	62	20	0	10	30	142
05:00 PM	0	52	0	52	0	45	0	45	13	0	12	25	122
05:15 PM	0	49	0	49	0	44	0	44	9	0	6	15	108
05:30 PM	0	37	0	37	0	46	0	46	9	0	10	19	102
Total Volume	0	188	0	188	0	197	0	197	51	0	38	89	474
% App. Total	0	100	0		0	100	0		57.3	0	42.7		
PHF	.000	.904	.000	.904	.000	.794	.000	.794	.638	.000	.792	.742	.835
Auto	0	187	0	187	0	194	0	194	51	0	38	89	470
% Auto	0	99.5	0	99.5	0	98.5	0	98.5	100	0	100	100	99.2
HV	0	1	0	1	0	3	0	3	0	0	0	0	4
% HV	0	0.5	0	0.5	0	1.5	0	1.5	0	0	0	0	0.8
B/SB	0	0	0	0	0	0	0	0	0	0	0	0	0
% B/SB	0	0	0	0	0	0	0	0	0	0	0	0	0

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Prospect Street (E/W)

and Ferris Place (N/S)

Westfield, Union County, New Jersey

Thursday, October 21, 2021

File Name : PRI-210151

Site Code : 00210151

Start Date : 10/21/2021

Page No : 1

Groups Printed- Auto - HV - B/SB

Start Time	Prospect Street Eastbound				Prospect Street Westbound				Ferris Place Southbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	22	5	27	7	4	1	12	1	0	0	1	40
07:15 AM	2	26	7	35	3	22	0	25	0	0	0	0	60
07:30 AM	1	8	2	11	5	24	0	29	1	0	0	1	41
07:45 AM	5	20	5	30	12	13	2	27	1	0	1	2	59
Total	8	76	19	103	27	63	3	93	3	0	1	4	200
08:00 AM	10	32	8	50	9	20	4	33	6	0	0	6	89
08:15 AM	3	25	4	32	10	24	11	45	4	0	3	7	84
08:30 AM	8	23	11	42	22	14	4	40	12	0	6	18	100
08:45 AM	8	23	17	48	31	26	8	65	14	0	3	17	130
Total	29	103	40	172	72	84	27	183	36	0	12	48	403
*** BREAK ***													
04:00 PM	15	24	7	46	11	25	9	45	25	0	8	33	124
04:15 PM	12	19	4	35	6	30	10	46	23	0	7	30	111
04:30 PM	9	19	11	39	8	35	6	49	17	0	3	20	108
04:45 PM	12	20	17	49	11	26	11	48	19	0	3	22	119
Total	48	82	39	169	36	116	36	188	84	0	21	105	462
05:00 PM	9	18	11	38	8	25	6	39	21	0	5	26	103
05:15 PM	16	21	6	43	5	41	11	57	19	0	8	27	127
05:30 PM	22	24	13	59	5	27	4	36	32	0	10	42	137
05:45 PM	13	19	7	39	9	38	3	50	19	0	7	26	115
Total	60	82	37	179	27	131	24	182	91	0	30	121	482
06:00 PM	5	20	15	40	12	33	9	54	18	0	10	28	122
06:15 PM	4	13	3	20	7	31	9	47	15	0	11	26	93
06:30 PM	10	22	3	35	6	18	7	31	8	0	8	16	82
06:45 PM	4	14	4	22	7	24	10	41	22	0	3	25	88
Total	23	69	25	117	32	106	35	173	63	0	32	95	385
Grand Total	168	412	160	740	194	500	125	819	277	0	96	373	1932
Apprch %	22.7	55.7	21.6		23.7	61.1	15.3		74.3	0	25.7		
Total %	8.7	21.3	8.3	38.3	10	25.9	6.5	42.4	14.3	0	5	19.3	
Auto	168	405	159	732	192	490	125	807	275	0	96	371	1910
% Auto	100	98.3	99.4	98.9	99	98	100	98.5	99.3	0	100	99.5	98.9
HV	0	3	0	3	2	5	0	7	1	0	0	1	11
% HV	0	0.7	0	0.4	1	1	0	0.9	0.4	0	0	0.3	0.6
B/SB	0	4	1	5	0	5	0	5	1	0	0	1	11
% B/SB	0	1	0.6	0.7	0	1	0	0.6	0.4	0	0	0.3	0.6

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of Prospect Street (E/W)
and Ferris Place (N/S)
Westfield, Union County, New Jersey
Thursday, October 21, 2021

File Name : PRI-210151
Site Code : 00210151
Start Date : 10/21/2021
Page No : 2

	Prospect Street Eastbound				Prospect Street Westbound				Ferris Place Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis from 08:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	10	32	8	50	9	20	4	33	6	0	0	6	89
08:15 AM	3	25	4	32	10	24	11	45	4	0	3	7	84
08:30 AM	8	23	11	42	22	14	4	40	12	0	6	18	100
08:45 AM	8	23	17	48	31	26	8	65	14	0	3	17	130
Total Volume	29	103	40	172	72	84	27	183	36	0	12	48	403
% App. Total	16.9	59.9	23.3		39.3	45.9	14.8		75	0	25		
PHF	.725	.805	.588	.860	.581	.808	.614	.704	.643	.000	.500	.667	.775
Auto	29	102	40	171	70	80	27	177	35	0	12	47	395
% Auto	100	99.0	100	99.4	97.2	95.2	100	96.7	97.2	0	100	97.9	98.0
HV	0	0	0	0	2	2	0	4	1	0	0	1	5
% HV	0	0	0	0	2.8	2.4	0	2.2	2.8	0	0	2.1	1.2
B/SB	0	1	0	1	0	2	0	2	0	0	0	0	3
% B/SB	0	1.0	0	0.6	0	2.4	0	1.1	0	0	0	0	0.7

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM

04:45 PM	12	20	17	49	11	26	11	48	19	0	3	22	119
05:00 PM	9	18	11	38	8	25	6	39	21	0	5	26	103
05:15 PM	16	21	6	43	5	41	11	57	19	0	8	27	127
05:30 PM	22	24	13	59	5	27	4	36	32	0	10	42	137
Total Volume	59	83	47	189	29	119	32	180	91	0	26	117	486
% App. Total	31.2	43.9	24.9		16.1	66.1	17.8		77.8	0	22.2		
PHF	.670	.865	.691	.801	.659	.726	.727	.789	.711	.000	.650	.696	.887
Auto	59	82	47	188	29	116	32	177	91	0	26	117	482
% Auto	100	98.8	100	99.5	100	97.5	100	98.3	100	0	100	100	99.2
HV	0	1	0	1	0	2	0	2	0	0	0	0	3
% HV	0	1.2	0	0.5	0	1.7	0	1.1	0	0	0	0	0.6
B/SB	0	0	0	0	0	1	0	1	0	0	0	0	1
% B/SB	0	0	0	0	0	0.8	0	0.6	0	0	0	0	0.2

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of North Avenue West (E/W)
and Clark Street (N/S)
Westfield, Union County, New Jersey
Thursday, December 09, 2021

File Name : PRI-210151_AM_DEC
Site Code : 00210151
Start Date : 12/9/2021
Page No : 1

Groups Printed- Auto - HV - B/SB

Start Time	North Avenue West Eastbound				North Avenue West Westbound				Clark Street Southbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	1	85	0	86	0	99	21	120	42	0	2	44	250
07:15 AM	1	133	0	134	0	84	31	115	49	0	2	51	300
07:30 AM	2	116	0	118	0	92	38	130	18	0	2	20	268
07:45 AM	3	166	0	169	0	118	54	172	29	0	0	29	370
Total	7	500	0	507	0	393	144	537	138	0	6	144	1188
08:00 AM	0	142	0	142	0	126	38	164	39	0	3	42	348
08:15 AM	0	161	0	161	0	110	37	147	34	0	0	34	342
08:30 AM	2	136	0	138	0	113	29	142	49	0	1	50	330
08:45 AM	4	139	0	143	0	103	26	129	36	0	5	41	313
Total	6	578	0	584	0	452	130	582	158	0	9	167	1333
Grand Total	13	1078	0	1091	0	845	274	1119	296	0	15	311	2521
Apprch %	1.2	98.8	0		0	75.5	24.5		95.2	0	4.8		
Total %	0.5	42.8	0	43.3	0	33.5	10.9	44.4	11.7	0	0.6	12.3	
Auto	13	1035	0	1048	0	819	267	1086	287	0	15	302	2436
% Auto	100	96	0	96.1	0	96.9	97.4	97.1	97	0	100	97.1	96.6
HV	0	24	0	24	0	21	1	22	8	0	0	8	54
% HV	0	2.2	0	2.2	0	2.5	0.4	2	2.7	0	0	2.6	2.1
B/SB	0	19	0	19	0	5	6	11	1	0	0	1	31
% B/SB	0	1.8	0	1.7	0	0.6	2.2	1	0.3	0	0	0.3	1.2

	North Avenue West Eastbound				North Avenue West Westbound				Clark Street Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	142	0	142	0	126	38	164	39	0	3	42	348
08:15 AM	0	161	0	161	0	110	37	147	34	0	0	34	342
08:30 AM	2	136	0	138	0	113	29	142	49	0	1	50	330
08:45 AM	4	139	0	143	0	103	26	129	36	0	5	41	313
Total Volume	6	578	0	584	0	452	130	582	158	0	9	167	1333
% App. Total	1	99	0		0	77.7	22.3		94.6	0	5.4		
PHF	.375	.898	.000	.907	.000	.897	.855	.887	.806	.000	.450	.835	.958
Auto	6	555	0	561	0	434	126	560	151	0	9	160	1281
% Auto	100	96.0	0	96.1	0	96.0	96.9	96.2	95.6	0	100	95.8	96.1
HV	0	15	0	15	0	14	0	14	6	0	0	6	35
% HV	0	2.6	0	2.6	0	3.1	0	2.4	3.8	0	0	3.6	2.6
B/SB	0	8	0	8	0	4	4	8	1	0	0	1	17
% B/SB	0	1.4	0	1.4	0	0.9	3.1	1.4	0.6	0	0	0.6	1.3

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of North Avenue West (E/W)
and Clark Street (N/S)
Westfield, Union County, New Jersey
Wednesday, December 08, 2021

File Name : PRI-210151_PM_DEC
Site Code : 00210151
Start Date : 12/8/2021
Page No : 1

Groups Printed- Auto - HV - B/SB

Start Time	North Avenue West Eastbound				North Avenue West Westbound				Clark Street Southbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	1	127	0	128	0	148	34	182	40	0	15	55	365
04:15 PM	1	128	0	129	0	119	35	154	45	0	3	48	331
04:30 PM	6	132	0	138	0	151	52	203	44	0	5	49	390
04:45 PM	3	134	0	137	0	171	35	206	59	0	8	67	410
Total	11	521	0	532	0	589	156	745	188	0	31	219	1496
05:00 PM	0	123	0	123	0	166	44	210	52	0	3	55	388
05:15 PM	1	152	0	153	1	164	29	194	56	0	10	66	413
05:30 PM	1	124	1	126	0	150	38	188	54	0	14	68	382
05:45 PM	3	141	0	144	0	151	48	199	40	0	5	45	388
Total	5	540	1	546	1	631	159	791	202	0	32	234	1571
06:00 PM	3	141	0	144	0	138	50	188	40	0	11	51	383
06:15 PM	3	134	0	137	0	122	43	165	60	0	6	66	368
06:30 PM	6	126	0	132	0	113	54	167	49	0	3	52	351
06:45 PM	10	92	0	102	0	117	39	156	58	0	10	68	326
Total	22	493	0	515	0	490	186	676	207	0	30	237	1428
Grand Total	38	1554	1	1593	1	1710	501	2212	597	0	93	690	4495
Apprch %	2.4	97.6	0.1		0	77.3	22.6		86.5	0	13.5		
Total %	0.8	34.6	0	35.4	0	38	11.1	49.2	13.3	0	2.1	15.4	
Auto	38	1536	1	1575	1	1678	485	2164	593	0	93	686	4425
% Auto	100	98.8	100	98.9	100	98.1	96.8	97.8	99.3	0	100	99.4	98.4
HV	0	16	0	16	0	23	15	38	3	0	0	3	57
% HV	0	1	0	1	0	1.3	3	1.7	0.5	0	0	0.4	1.3
B/SB	0	2	0	2	0	9	1	10	1	0	0	1	13
% B/SB	0	0.1	0	0.1	0	0.5	0.2	0.5	0.2	0	0	0.1	0.3

	North Avenue West Eastbound				North Avenue West Westbound				Clark Street Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	3	134	0	137	0	171	35	206	59	0	8	67	410
05:00 PM	0	123	0	123	0	166	44	210	52	0	3	55	388
05:15 PM	1	152	0	153	1	164	29	194	56	0	10	66	413
05:30 PM	1	124	1	126	0	150	38	188	54	0	14	68	382
Total Volume	5	533	1	539	1	651	146	798	221	0	35	256	1593
% App. Total	0.9	98.9	0.2		0.1	81.6	18.3		86.3	0	13.7		
PHF	.417	.877	.250	.881	.250	.952	.830	.950	.936	.000	.625	.941	.964
Auto	5	529	1	535	1	639	142	782	218	0	35	253	1570
% Auto	100	99.2	100	99.3	100	98.2	97.3	98.0	98.6	0	100	98.8	98.6
HV	0	3	0	3	0	10	4	14	2	0	0	2	19
% HV	0	0.6	0	0.6	0	1.5	2.7	1.8	0.9	0	0	0.8	1.2
B/SB	0	1	0	1	0	2	0	2	1	0	0	1	4
% B/SB	0	0.2	0	0.2	0	0.3	0	0.3	0.5	0	0	0.4	A15 0.3

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070

201.340.4468 t. 201.340.4472 f.

Intersection of North Avenue West (E/W)
and Clark Street (N/S)

Westfield, Union County, New Jersey

Saturday, December 18, 2021

File Name : pri-210151_sat_dec

Site Code : 00210151

Start Date : 12/18/2021

Page No : 1

Groups Printed- Auto - HV - B/SB

	North Avenue West Eastbound				North Avenue West Westbound				Clark Street Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
11:00 AM	6	120	0	126	0	93	36	129	40	0	8	48	303
11:15 AM	2	114	0	116	0	133	34	167	34	0	6	40	323
11:30 AM	3	136	0	139	0	120	37	157	30	0	1	31	327
11:45 AM	4	147	0	151	0	108	31	139	47	0	6	53	343
Total	15	517	0	532	0	454	138	592	151	0	21	172	1296
12:00 PM	1	130	0	131	0	142	30	172	19	0	11	30	333
12:15 PM	5	132	0	137	0	109	30	139	39	0	10	49	325
12:30 PM	3	118	0	121	0	124	35	159	46	0	7	53	333
12:45 PM	3	136	0	139	0	108	27	135	52	0	4	56	330
Total	12	516	0	528	0	483	122	605	156	0	32	188	1321
01:00 PM	1	111	0	112	0	117	30	147	27	0	11	38	297
01:15 PM	2	113	0	115	0	125	29	154	35	0	7	42	311
01:30 PM	2	117	0	119	0	151	39	190	25	0	9	34	343
01:45 PM	2	135	0	137	0	135	33	168	29	0	11	40	345
Total	7	476	0	483	0	528	131	659	116	0	38	154	1296
Grand Total	34	1509	0	1543	0	1465	391	1856	423	0	91	514	3913
Apprch %	2.2	97.8	0		0	78.9	21.1		82.3	0	17.7		
Total %	0.9	38.6	0	39.4	0	37.4	10	47.4	10.8	0	2.3	13.1	
Auto	34	1501	0	1535	0	1454	388	1842	423	0	91	514	3891
% Auto	100	99.5	0	99.5	0	99.2	99.2	99.2	100	0	100	100	99.4
HV	0	6	0	6	0	8	3	11	0	0	0	0	17
% HV	0	0.4	0	0.4	0	0.5	0.8	0.6	0	0	0	0	0.4
B/SB	0	2	0	2	0	3	0	3	0	0	0	0	5
% B/SB	0	0.1	0	0.1	0	0.2	0	0.2	0	0	0	0	0.1

	North Avenue West Eastbound				North Avenue West Westbound				Clark Street Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:45 AM													
11:45 AM	4	147	0	151	0	108	31	139	47	0	6	53	343
12:00 PM	1	130	0	131	0	142	30	172	19	0	11	30	333
12:15 PM	5	132	0	137	0	109	30	139	39	0	10	49	325
12:30 PM	3	118	0	121	0	124	35	159	46	0	7	53	333
Total Volume	13	527	0	540	0	483	126	609	151	0	34	185	1334
% App. Total	2.4	97.6	0		0	79.3	20.7		81.6	0	18.4		
PHF	.650	.896	.000	.894	.000	.850	.900	.885	.803	.000	.773	.873	.972
Auto	13	526	0	539	0	478	124	602	151	0	34	185	1326
% Auto	100	99.8	0	99.8	0	99.0	98.4	98.9	100	0	100	100	99.4
HV	0	0	0	0	0	4	2	6	0	0	0	0	6
% HV	0	0	0	0	0	0.8	1.6	1.0	0	0	0	0	0.4
B/SB	0	1	0	1	0	1	0	1	0	0	0	0	2
% B/SB	0	0.2	0	0.2	0	0.2	0	0.2	0	0	0	0	0.1

Stonefield Engineering & Design, LLC

92 Park Avenue, Rutherford, NJ 07070
201.340.4468 t. 201.340.4472 f.

Intersection of Ferris Place (E/W)
and Clark Street (N/S)
Westfield, Union County, New Jersey
Tuesday, April 5, 2022

File Name : PRI-210151_APR
Site Code : 00210151
Start Date : 4/5/2022
Page No : 1

Groups Printed- Auto - HV - B/SB

	Ferris Place Southbound				Clark Street Westbound				Clark Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	25	0	25	0	37	0	37	62
07:15 AM	9	0	1	10	0	29	0	29	0	58	0	58	97
07:30 AM	4	0	4	8	0	59	0	59	0	25	0	25	92
07:45 AM	6	0	2	8	0	47	0	47	0	38	0	38	93
Total	19	0	7	26	0	160	0	160	0	158	0	158	344
08:00 AM	7	0	10	17	0	78	0	78	0	45	0	45	140
08:15 AM	6	0	7	13	0	30	0	30	0	39	0	39	82
08:30 AM	19	0	11	30	0	30	0	30	0	38	0	38	98
08:45 AM	18	0	8	26	0	33	0	33	0	24	0	24	83
Total	50	0	36	86	0	171	0	171	0	146	0	146	403
*** BREAK ***													
03:00 PM	18	0	10	28	0	27	0	27	0	36	0	36	91
03:15 PM	10	0	2	12	0	44	0	44	0	48	0	48	104
03:30 PM	10	0	4	14	0	41	0	41	0	31	0	31	86
03:45 PM	8	0	2	10	0	36	0	36	0	34	0	34	80
Total	46	0	18	64	0	148	0	148	0	149	0	149	361
04:00 PM	14	0	5	19	0	36	0	36	0	34	0	34	89
04:15 PM	9	0	3	12	0	43	0	43	0	38	0	38	93
04:30 PM	8	0	7	15	0	38	0	38	0	42	0	42	95
04:45 PM	17	0	10	27	0	35	0	35	0	50	0	50	112
Total	48	0	25	73	0	152	0	152	0	164	0	164	389
05:00 PM	11	0	3	14	0	40	0	40	0	30	0	30	84
05:15 PM	9	0	8	17	0	41	0	41	0	33	0	33	91
05:30 PM	14	0	10	24	0	48	0	48	0	35	0	35	107
05:45 PM	17	0	6	23	0	41	0	41	0	53	0	53	117
Total	51	0	27	78	0	170	0	170	0	151	0	151	399
06:00 PM	8	0	10	18	0	57	0	57	0	45	0	45	120
06:15 PM	4	0	4	8	0	39	0	39	0	37	0	37	84
Grand Total	226	0	127	353	0	897	0	897	0	850	0	850	2100
Approch %	64	0	36		0	100	0		0	100	0		
Total %	10.8	0	6	16.8	0	42.7	0	42.7	0	40.5	0	40.5	
Auto	221	0	127	348	0	861	0	861	0	815	0	815	2024
% Auto	97.8	0	100	98.6	0	96	0	96	0	95.9	0	95.9	96.4
HV	4	0	0	4	0	27	0	27	0	25	0	25	56
% HV	1.8	0	0	1.1	0	3	0	3	0	2.9	0	2.9	2.7
B/SB	1	0	0	1	0	9	0	9	0	10	0	10	20
% B/SB	0.4	0	0	0.3	0	1	0	1	0	1.2	0	1.2	1

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Intersection of Ferris Place (E/W)
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Westfield, Union County, New Jersey
Tuesday, April 5, 2022

File Name : PRI-210151_APR

Site Code : 00210151

Start Date : 4/5/2022

Page No : 2

	Ferris Place Southbound				Clark Street Westbound				Clark Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	9	0	1	10	0	29	0	29	0	58	0	58	97
07:30 AM	4	0	4	8	0	59	0	59	0	25	0	25	92
07:45 AM	6	0	2	8	0	47	0	47	0	38	0	38	93
08:00 AM	7	0	10	17	0	78	0	78	0	45	0	45	140
Total Volume	26	0	17	43	0	213	0	213	0	166	0	166	422
% App. Total	60.5	0	39.5		0	100	0		0	100	0		
PHF	.722	.000	.425	.632	.000	.683	.000	.683	.000	.716	.000	.716	.754
Auto	25	0	17	42	0	204	0	204	0	154	0	154	400
% Auto	96.2	0	100	97.7	0	95.8	0	95.8	0	92.8	0	92.8	94.8
HV	1	0	0	1	0	6	0	6	0	10	0	10	17
% HV	3.8	0	0	2.3	0	2.8	0	2.8	0	6.0	0	6.0	4.0
B/SB	0	0	0	0	0	3	0	3	0	2	0	2	5
% B/SB	0	0	0	0	0	1.4	0	1.4	0	1.2	0	1.2	1.2
Peak Hour Analysis From 12:00 PM to 06:15 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:15 PM													
05:15 PM	9	0	8	17	0	41	0	41	0	33	0	33	91
05:30 PM	14	0	10	24	0	48	0	48	0	35	0	35	107
05:45 PM	17	0	6	23	0	41	0	41	0	53	0	53	117
06:00 PM	8	0	10	18	0	57	0	57	0	45	0	45	120
Total Volume	48	0	34	82	0	187	0	187	0	166	0	166	435
% App. Total	58.5	0	41.5		0	100	0		0	100	0		
PHF	.706	.000	.850	.854	.000	.820	.000	.820	.000	.783	.000	.783	.906
Auto	48	0	34	82	0	182	0	182	0	164	0	164	428
% Auto	100	0	100	100	0	97.3	0	97.3	0	98.8	0	98.8	98.4
HV	0	0	0	0	0	4	0	4	0	2	0	2	6
% HV	0	0	0	0	0	2.1	0	2.1	0	1.2	0	1.2	1.4
B/SB	0	0	0	0	0	1	0	1	0	0	0	0	1
% B/SB	0	0	0	0	0	0.5	0	0.5	0	0	0	0	0.2

STONEFIELD

Weekday Network Peak Hour Summarization Table

Peak Hour Ranges

AM: 7:00 AM to 9:00 AM
 MID: 11:00 AM to 2:00 PM
 PM: 4:00 PM to 7:00 PM

Network Peak Hour

AM: 3375 8:00 AM to 9:00 AM
 MID:
 PM: 3851 4:45 PM to 5:45 PM

Time	Intersection Volumes				Total	Hourly
	Prospect St & Broad St	Prospect St & Ferris Pl	Clark St & Ferris Pl	North Ave & Clark St		
7:00 AM	191	40	96	250	577	2817
7:15 AM	289	60	98	300	747	3151
7:30 AM	288	41	78	268	675	3184
7:45 AM	289	59	100	370	818	3329
8:00 AM	346	89	128	348	911	3375
8:15 AM	302	84	52	342	780	2464
8:30 AM	296	100	94	330	820	1684
8:45 AM	333	130	88	313	864	864
4:00 PM	291	124	91	365	871	3610
4:15 PM	298	111	99	331	839	3680
4:30 PM	299	108	113	390	910	3812
4:45 PM	319	119	142	410	990	3851
5:00 PM	328	103	122	388	941	3808
5:15 PM	323	127	108	413	971	3798
5:30 PM	328	137	102	382	949	3710
5:45 PM	343	115	101	388	947	3567
6:00 PM	313	122	113	383	931	3405
6:15 PM	324	93	98	368	883	2474
6:30 PM	289	82	84	351	806	1591
6:45 PM	293	88	78	326	785	785

STONEFIELD

Saturday Network Peak Hour Summarization Table

Peak Hour Ranges

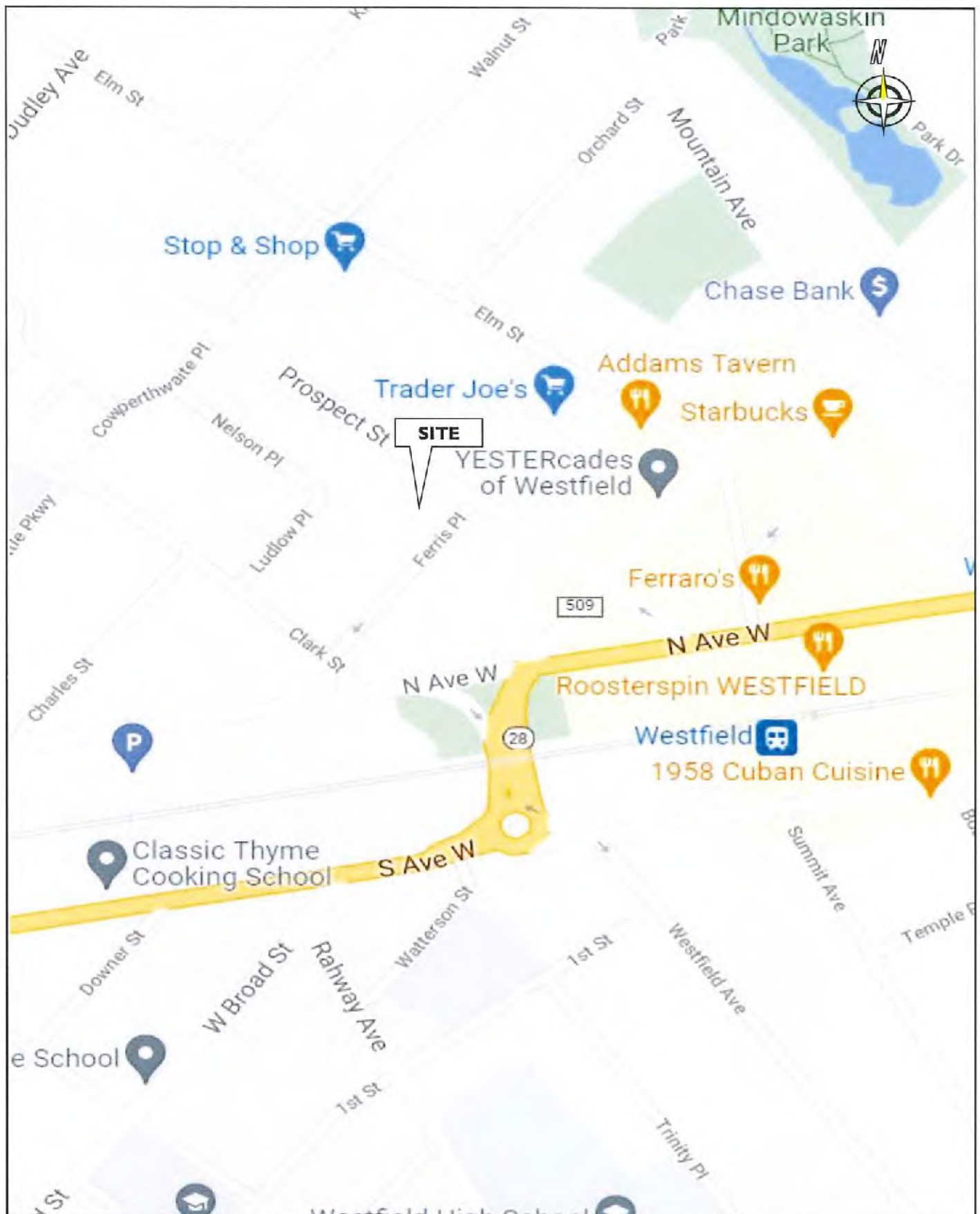
AM: 7:00 AM to 9:00 AM
 MID: 11:00 AM to 2:00 PM
 PM: 4:00 PM to 7:00 PM

Network Peak Hour

AM:
 MID: 3463 11:45 AM to 12:45 PM
 PM:

Time	Intersection Volumes				Total	Hourly
	Prospect St & Broad St	Prospect St & Ferris Pl	Clark St & Ferris Pl	North Ave & Clark St		
11:00 AM	283	100	88	303	774	3221
11:15 AM	291	117	71	323	802	3290
11:30 AM	267	89	74	327	757	3342
11:45 AM	323	120	102	343	888	3463
12:00 PM	295	111	104	333	843	3381
12:15 PM	307	123	99	325	854	3301
12:30 PM	320	127	98	333	878	3238
12:45 PM	264	127	85	330	806	3187
1:00 PM	280	101	85	297	763	3227
1:15 PM	280	97	103	311	791	2464
1:30 PM	272	115	97	343	827	1673
1:45 PM	277	128	96	345	846	846

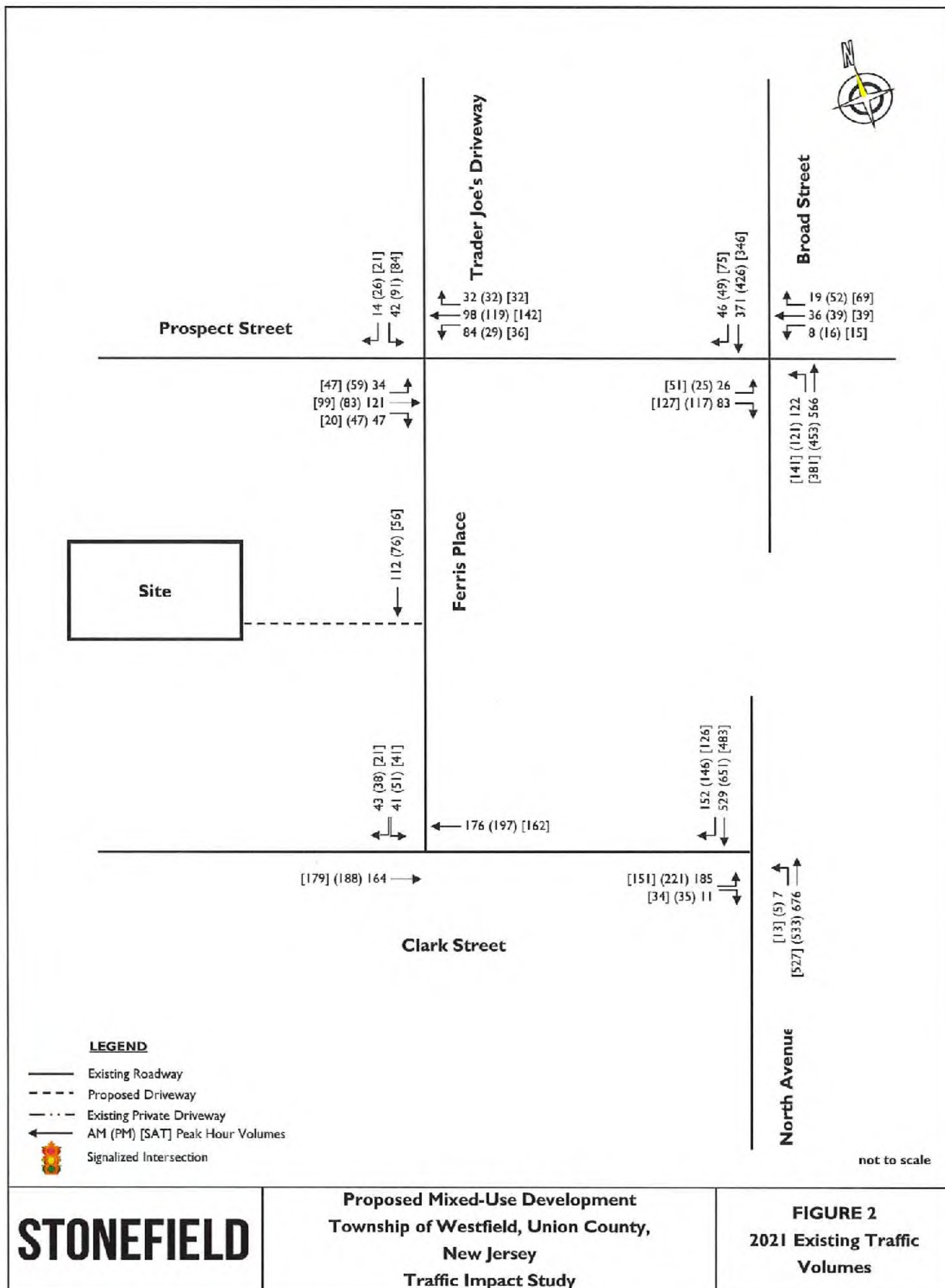
FIGURES

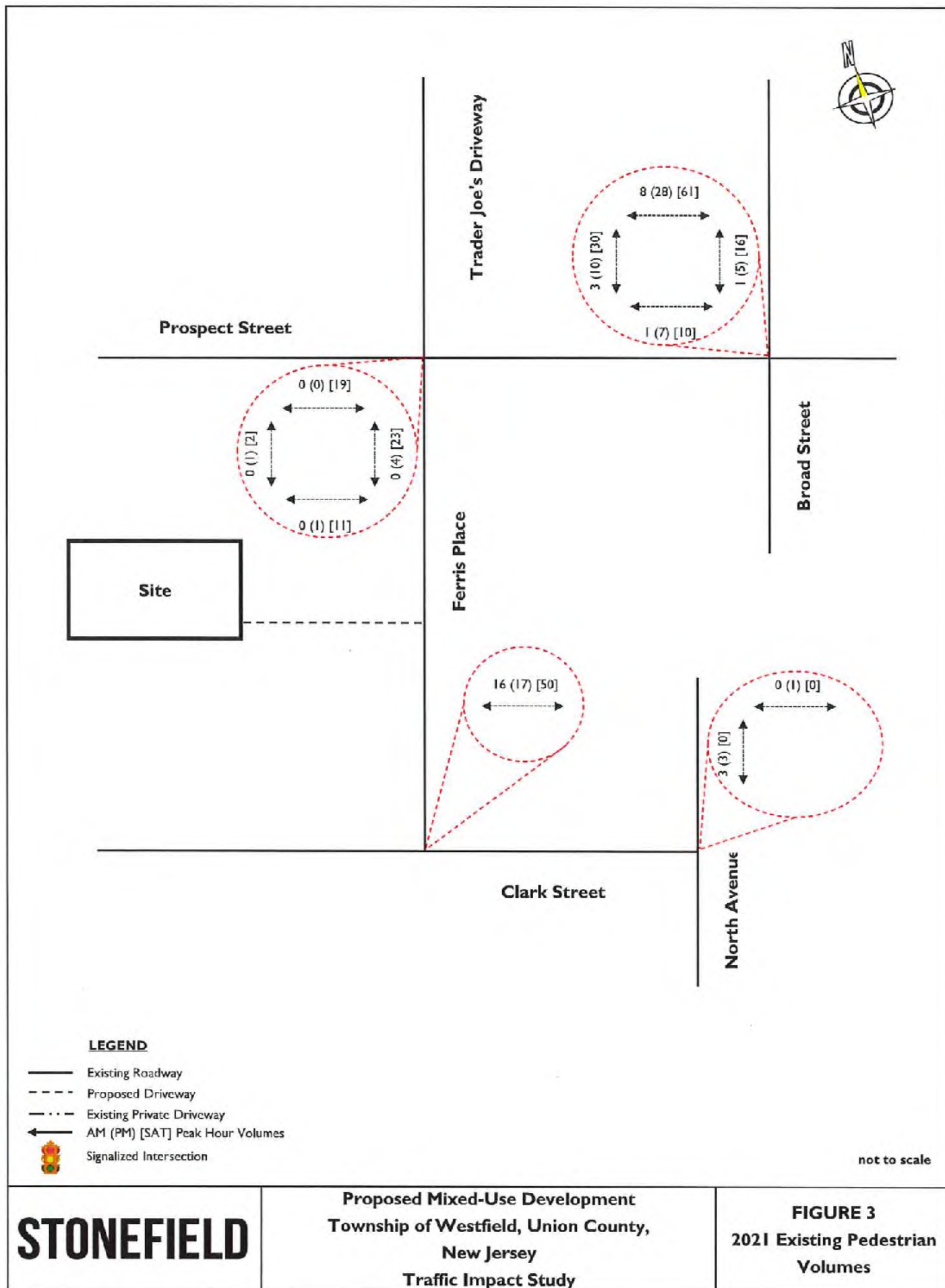


STONEFIELD

Proposed Mixed-Use Development
Township of Westfield, Union County,
New Jersey
Traffic Impact Study

FIGURE I
Site Location Map

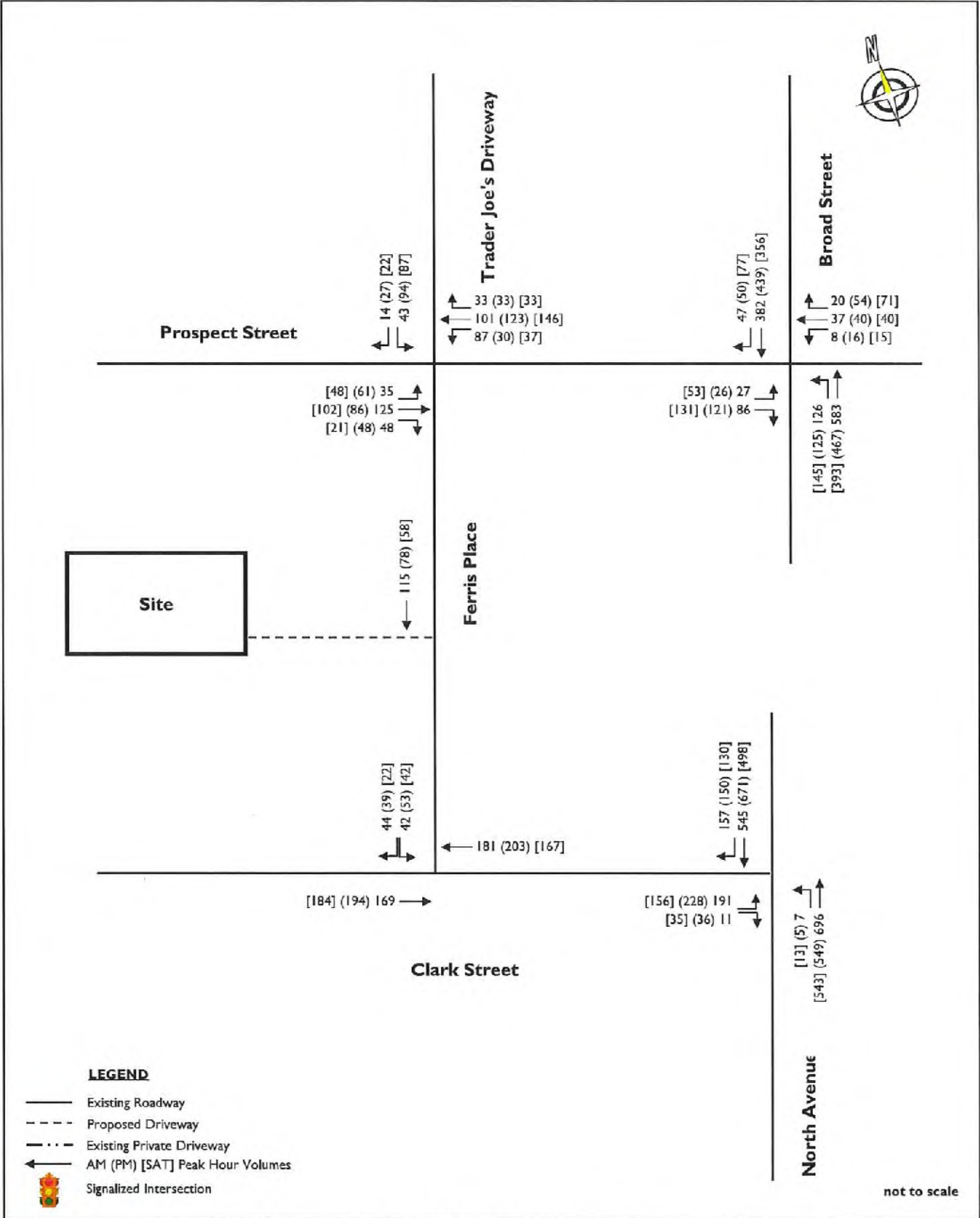




STONEFIELD

Proposed Mixed-Use Development
 Township of Westfield, Union County,
 New Jersey
Traffic Impact Study

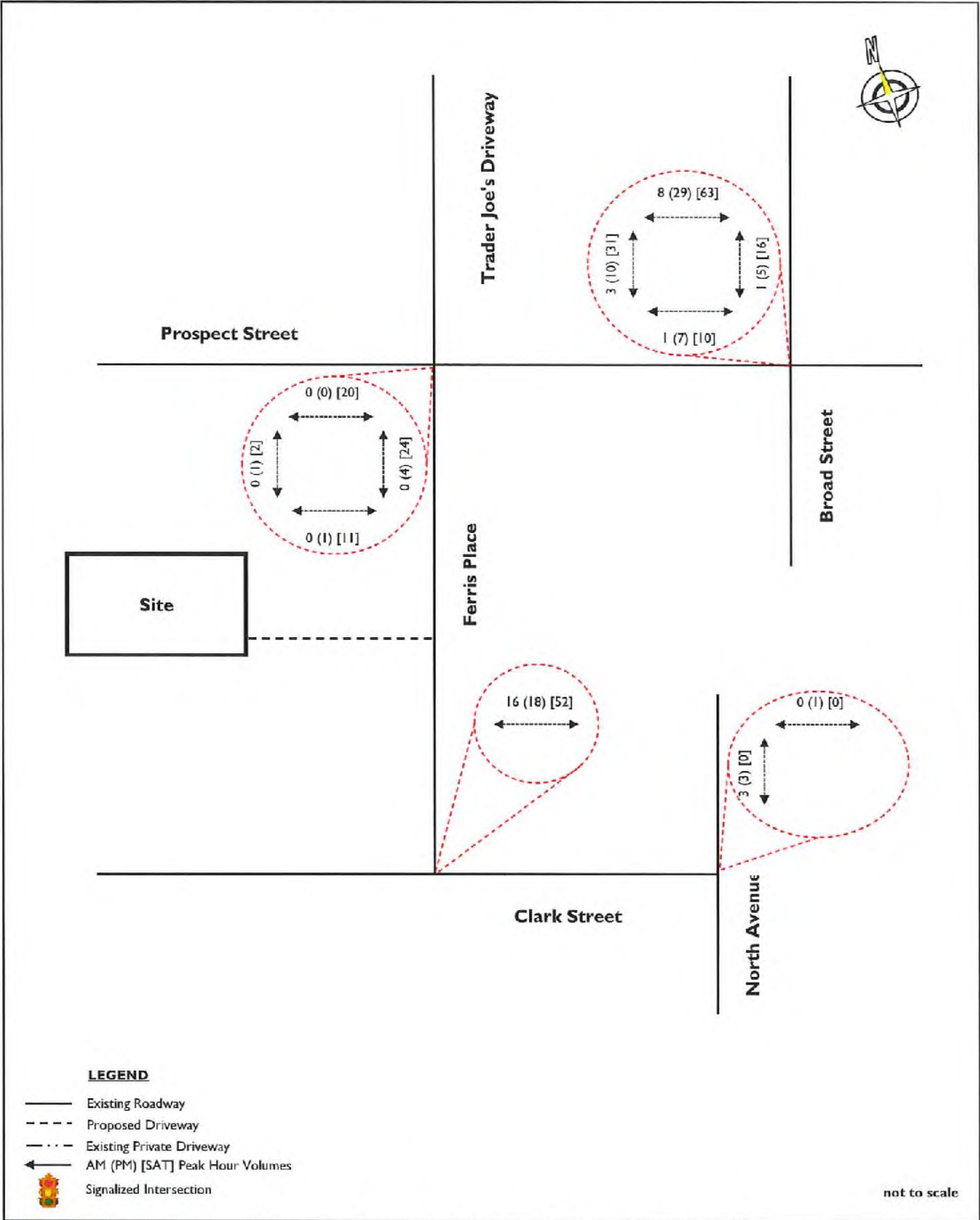
FIGURE 3
2021 Existing Pedestrian
Volumes



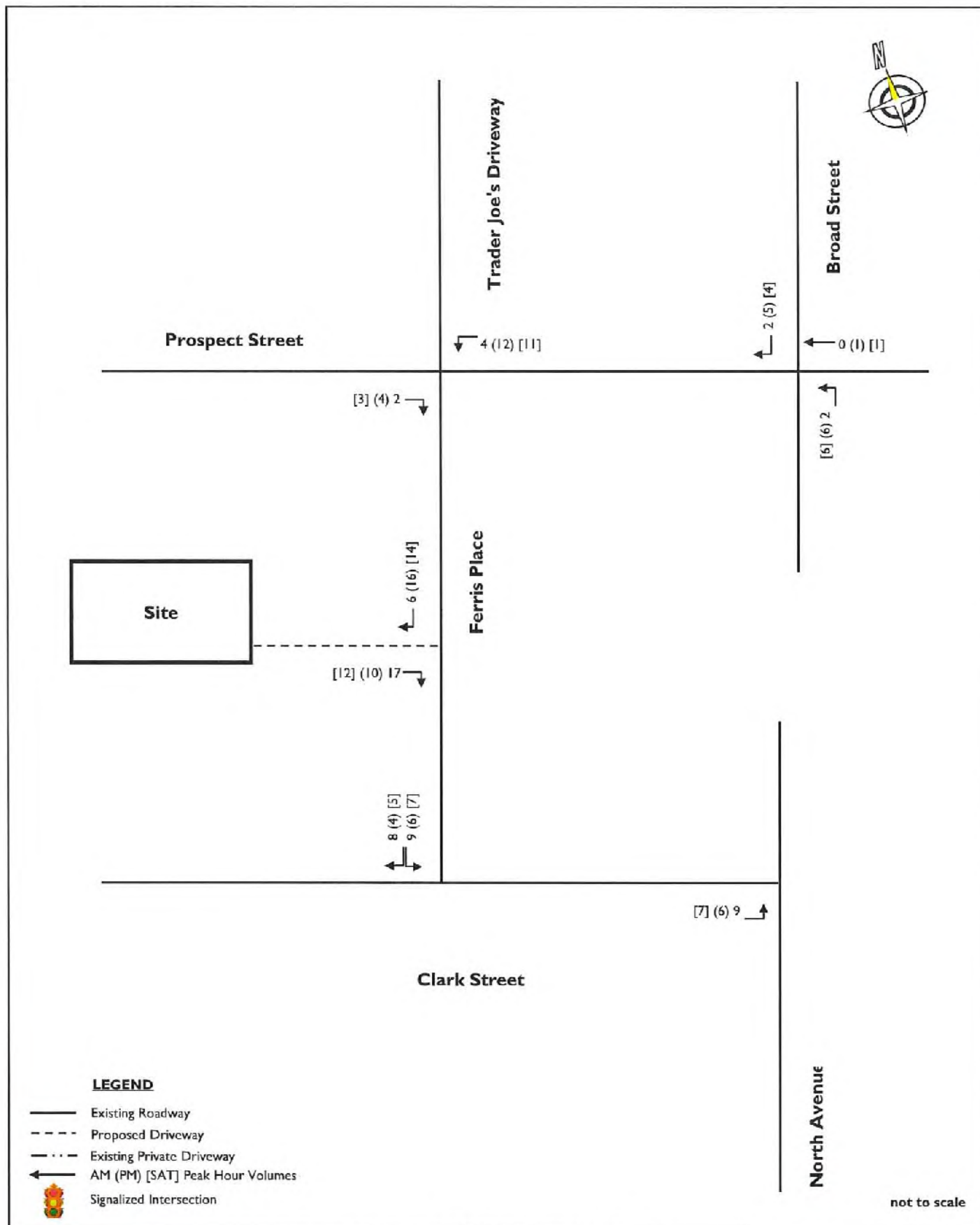
STONEFIELD

Proposed Mixed-Use Development
Township of Westfield, Union County,
New Jersey
Traffic Impact Study

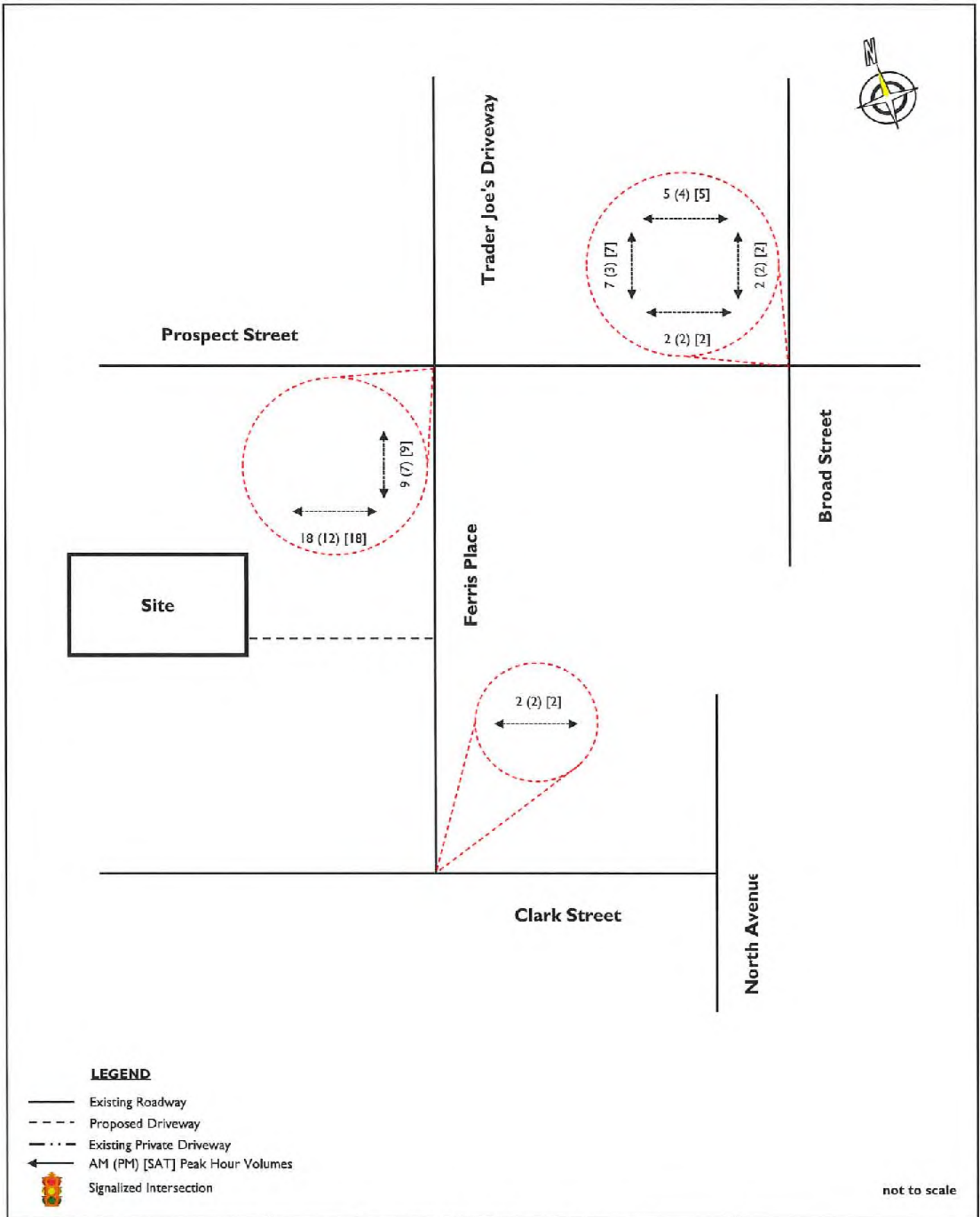
FIGURE 4
2024 No-Build Traffic
Volumes



<p>STONEFIELD</p>	<p>Proposed Mixed-Use Development Township of Westfield, Union County, New Jersey Traffic Impact Study</p>	<p>FIGURE 5 2024 No-Build Pedestrian Volumes</p>
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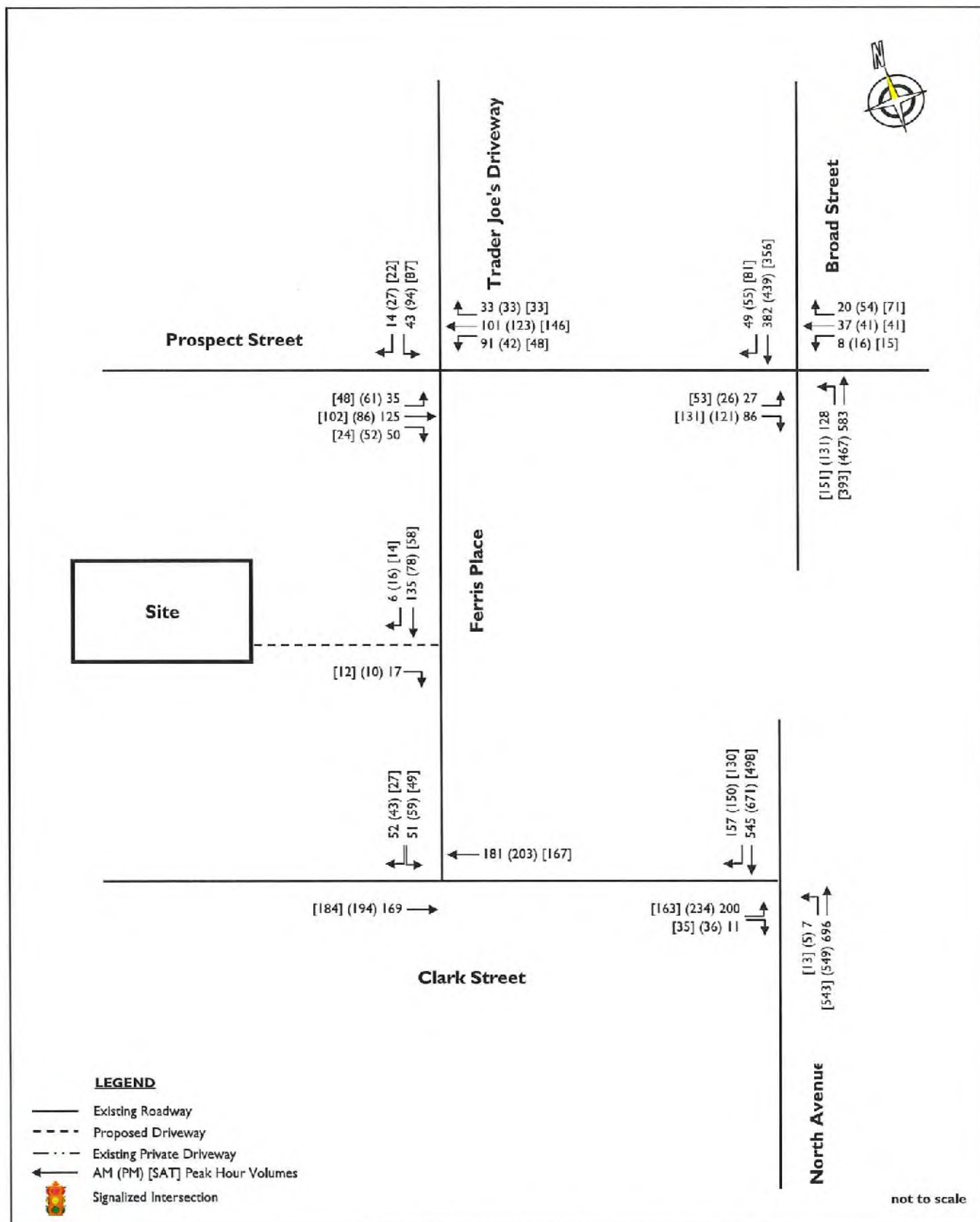
STONEFIELD	Proposed Mixed-Use Development Township of Westfield, Union County, New Jersey Traffic Impact Study	FIGURE 6 "New" Site-Generated Traffic Volumes
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STONEFIELD

Proposed Mixed-Use Development
Township of Westfield, Union County,
New Jersey
Traffic Impact Study

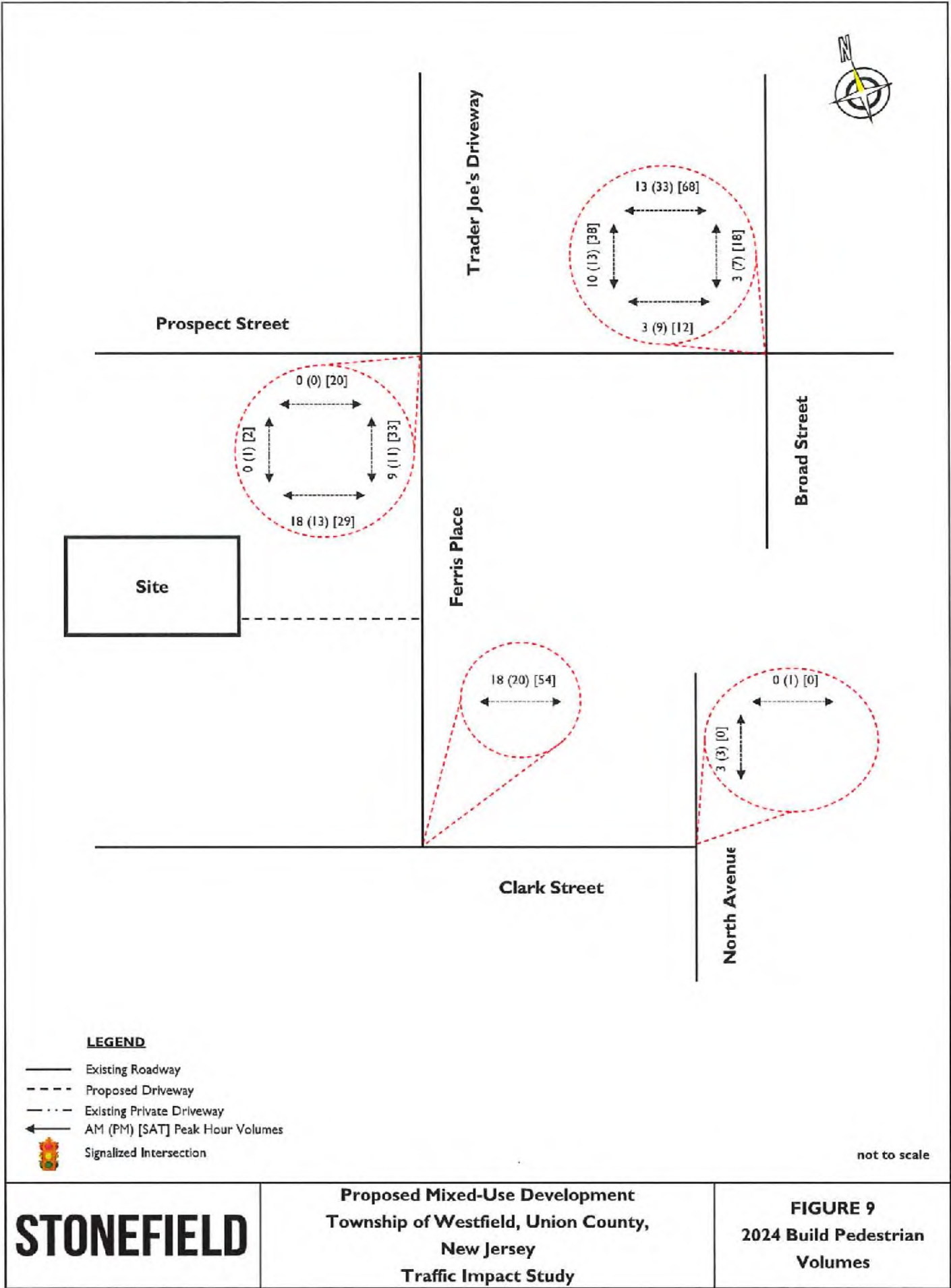
FIGURE 7
"New" Site-Generated
Pedestrian Volumes

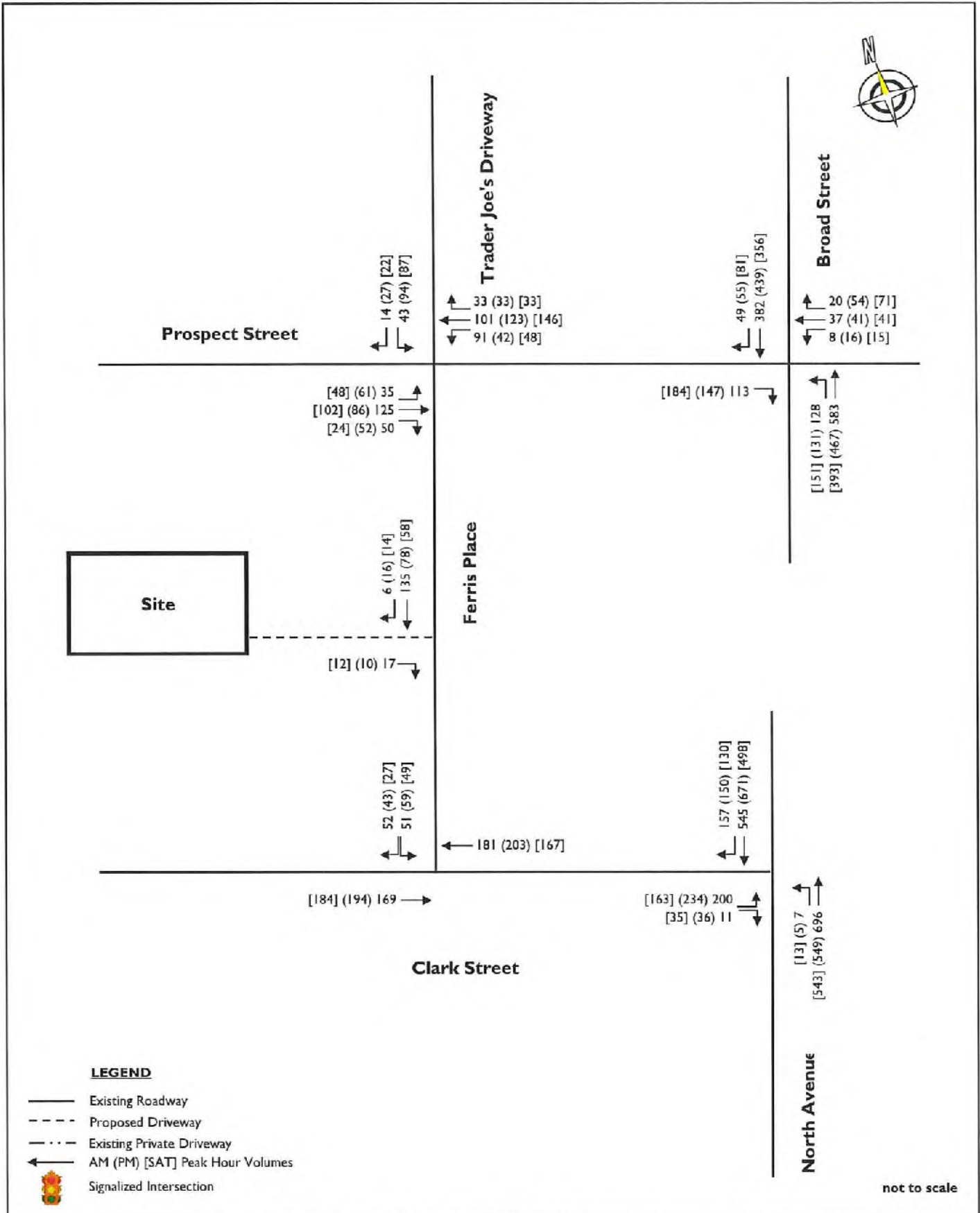


STONEFIELD

Proposed Mixed-Use Development
Township of Westfield, Union County,
New Jersey
Traffic Impact Study

FIGURE 8
2024 Build Traffic Volumes





STONEFIELD

Proposed Mixed-Use Development
Township of Westfield, Union County,
New Jersey
Traffic Impact Study

FIGURE 10
2024 Build (No Left)
Traffic Volumes

CAPACITY ANALYSIS DETAIL SHEETS

HCM 6th TWSC
1: Ferris Place & Prospect Street

2021 Existing Condition
Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔					↔		↔
Traffic Vol, veh/h	34	121	47	84	98	32	0	0	0	42	0	14
Future Vol, veh/h	34	121	47	84	98	32	0	0	0	42	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	0	1	0	3	5	0	0	0	0	3	0	0
Mvmt Flow	44	155	60	108	126	41	0	0	0	54	0	18

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	167	0	0	215	0	0	636	-	147
Stage 1	-	-	-	-	-	-	363	-	-
Stage 2	-	-	-	-	-	-	273	-	-
Critical Hdwy	4.1	-	-	4.13	-	-	6.43	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	-	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.527	-	3.3
Pot Cap-1 Maneuver	1423	-	-	1349	-	-	440	0	905
Stage 1	-	-	-	-	-	-	702	0	-
Stage 2	-	-	-	-	-	-	771	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1423	-	-	1349	-	-	387	0	905
Mov Cap-2 Maneuver	-	-	-	-	-	-	387	0	-
Stage 1	-	-	-	-	-	-	677	0	-
Stage 2	-	-	-	-	-	-	702	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	3.1	14.1
HCM LOS	B		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1423	-	-	1349	-	-	387	905
HCM Lane V/C Ratio	0.031	-	-	0.08	-	-	0.139	0.02
HCM Control Delay (s)	7.6	0	-	7.9	0	-	15.8	9.1
HCM Lane LOS	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	0.3	-	-	0.5	0.1

HCM 6th TWSC
3: Broad Street & Prospect Street

2021 Existing Condition
Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↗	
Traffic Vol, veh/h	26	0	83	8	36	19	122	566	0	0	371	46
Future Vol, veh/h	26	0	83	8	36	19	122	566	0	0	371	46
Conflicting Peds, #/hr	8	0	1	1	0	8	3	0	0	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	0	1	0	8	0	2	3	0	0	7	2
Mvmt Flow	28	0	90	9	39	21	133	615	0	0	403	50

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1350	1312	432	1355	1337	623	456	0	-	-	-	0
Stage 1	431	431	-	881	881	-	-	-	-	-	-	-
Stage 2	919	881	-	474	456	-	-	-	-	-	-	-
Critical Hdwy	6.6	6	5.7	6.6	6.1	5.7	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.309	3.5	4.072	3.3	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	155	192	665	154	178	534	1105	-	0	0	-	-
Stage 1	599	586	-	344	356	-	-	-	0	0	-	-
Stage 2	322	367	-	575	558	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	108	168	662	121	156	530	1102	-	-	-	-	-
Mov Cap-2 Maneuver	108	168	-	121	156	-	-	-	-	-	-	-
Stage 1	525	584	-	302	313	-	-	-	-	-	-	-
Stage 2	236	323	-	496	556	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	24.8		34.5		1.5		0	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1102	-	298	189	-	-
HCM Lane V/C Ratio	0.12	-	0.398	0.362	-	-
HCM Control Delay (s)	8.7	-	24.8	34.5	-	-
HCM Lane LOS	A	-	C	D	-	-
HCM 95th %tile Q(veh)	0.4	-	1.8	1.5	-	-





HCM 6th TWSC
4: Clark Street & Ferris Place

2021 Existing Condition
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	164	176	0	41	43
Future Vol, veh/h	0	164	176	0	41	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	0	1	3	0	6	0
Mvmt Flow	0	231	248	0	58	61
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	479	248
Stage 1	-	-	-	-	248	-
Stage 2	-	-	-	-	231	-
Critical Hdwy	-	-	-	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	-	-	3.554	3.3
Pot Cap-1 Maneuver	0	-	-	0	538	796
Stage 1	0	-	-	0	784	-
Stage 2	0	-	-	0	798	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	538	796
Mov Cap-2 Maneuver	-	-	-	-	538	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	798	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		11.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	645			
HCM Lane V/C Ratio	-	-	0.183			
HCM Control Delay (s)	-	-	11.8			
HCM Lane LOS	-	-	B			
HCM 95th %tile Q(veh)	-	-	0.7			

HCM 6th TWSC
5: North Avenue & Clark Street

2021 Existing Condition
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	185	11	7	676	529	152
Future Vol, veh/h	185	11	7	676	529	152
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	4	0	0	4	4	3
Mvmt Flow	193	11	7	704	551	158
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1351	633	712	0	-	0
Stage 1	633	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Critical Hdwy	4.4	4.3	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	353	675	897	-	-	-
Stage 1	525	-	-	-	-	-
Stage 2	479	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	346	673	894	-	-	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	26.7	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	894	-	346	673	-	-
HCM Lane V/C Ratio	0.008	-	0.557	0.017	-	-
HCM Control Delay (s)	9.1	0	27.7	10.4	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	0	-	3.2	0.1	-	-

HCM 6th TWSC
1: Ferris Place & Prospect Street

2021 Existing Condition
Weekday Evening Peak Hour

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔					↔		↔
Traffic Vol, veh/h	59	83	47	29	119	32	0	0	0	91	0	26
Future Vol, veh/h	59	83	47	29	119	32	0	0	0	91	0	26
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	4	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	66	93	53	33	134	36	0	0	0	102	0	29
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	170	0	0	147	0	0		474	-	153		
Stage 1	-	-	-	-	-	-		218	-	-		
Stage 2	-	-	-	-	-	-		256	-	-		
Critical Hdwy	4.1	-	-	4.1	-	-		6.4	-	6.2		
Critical Hdwy Stg 1	-	-	-	-	-	-		5.4	-	-		
Critical Hdwy Stg 2	-	-	-	-	-	-		5.4	-	-		
Follow-up Hdwy	2.2	-	-	2.2	-	-		3.5	-	3.3		
Pot Cap-1 Maneuver	1420	-	-	1447	-	-		553	0	898		
Stage 1	-	-	-	-	-	-		823	0	-		
Stage 2	-	-	-	-	-	-		791	0	-		
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1420	-	-	1447	-	-		512	0	897		
Mov Cap-2 Maneuver	-	-	-	-	-	-		512	0	-		
Stage 1	-	-	-	-	-	-		781	0	-		
Stage 2	-	-	-	-	-	-		771	0	-		
Approach	EB			WB			SB					
HCM Control Delay, s	2.4			1.2			12.8					
HCM LOS							B					
Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2				
Capacity (veh/h)	1420	-	-	1447	-	-	512	897				
HCM Lane V/C Ratio	0.047	-	-	0.023	-	-	0.2	0.033				
HCM Control Delay (s)	7.7	0	-	7.5	0	-	13.8	9.1				
HCM Lane LOS	A	A	-	A	A	-	B	A				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	-	0.7	0.1				

HCM 6th TWSC
3: Broad Street & Prospect Street

2021 Existing Condition
Weekday Evening Peak Hour

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖			↖	
Traffic Vol, veh/h	25	0	117	16	39	52	121	453	0	0	426	49
Future Vol, veh/h	25	0	117	16	39	52	121	453	0	0	426	49
Conflicting Peds, #/hr	28	0	7	7	0	28	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	4	0	0	0	3	2	1	3	0	0	2	0
Mvmt Flow	25	0	118	16	39	53	122	458	0	0	430	49

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1241	1167	472	1223	1191	486	489	0	-	-	-	0
Stage 1	465	465	-	702	702	-	-	-	-	-	-	-
Stage 2	776	702	-	521	489	-	-	-	-	-	-	-
Critical Hdwy	6.6	6	5.7	6.6	6	5.7	4.11	-	-	-	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.5	4.027	3.318	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	181	230	636	187	222	624	1079	-	0	0	-	-
Stage 1	574	566	-	432	439	-	-	-	0	0	-	-
Stage 2	387	443	-	542	548	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	123	202	626	137	195	607	1069	-	-	-	-	-
Mov Cap-2 Maneuver	123	202	-	137	195	-	-	-	-	-	-	-
Stage 1	503	560	-	383	389	-	-	-	-	-	-	-
Stage 2	274	392	-	437	543	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.2		27.5		1.9		0	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	1069	-	364	266	-
HCM Lane V/C Ratio	0.114	-	0.394	0.406	-
HCM Control Delay (s)	8.8	-	21.2	27.5	-
HCM Lane LOS	A	-	C	D	-
HCM 95th %tile Q(veh)	0.4	-	1.8	1.9	-

HCM 6th TWSC
4: Clark Street & Ferris Place

2021 Existing Condition
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	188	197	0	51	38
Future Vol, veh/h	0	188	197	0	51	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	224	235	0	61	45





Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0 459 235
Stage 1	-	-	- 235 -
Stage 2	-	-	- 224 -
Critical Hdwy	-	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	-	-	- 3.5 3.3
Pot Cap-1 Maneuver	0	-	0 564 809
Stage 1	0	-	0 809 -
Stage 2	0	-	0 818 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- 564 809
Mov Cap-2 Maneuver	-	-	- 564 -
Stage 1	-	-	- 809 -
Stage 2	-	-	- 818 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	648
HCM Lane V/C Ratio	-	-	0.164
HCM Control Delay (s)	-	-	11.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.6

HCM 6th TWSC
5: North Avenue & Clark Street

2021 Existing Condition
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	4.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	221	35	5	533	651	146
Future Vol, veh/h	221	35	5	533	651	146
Conflicting Peds, #/hr	1	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	1	2	3
Mvmt Flow	230	36	5	555	678	152
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1323	757	833	0	-	0
Stage 1	757	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Critical Hdwy	4.4	4.3	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	362	612	809	-	-	-
Stage 1	465	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	357	610	807	-	-	-
Mov Cap-2 Maneuver	357	-	-	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	28.9	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	807	-	357	610	-	-
HCM Lane V/C Ratio	0.006	-	0.645	0.06	-	-
HCM Control Delay (s)	9.5	0	31.7	11.3	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	0	-	4.3	0.2	-	-

HCM 6th TWSC
1: Ferris Place & Prospect Street

2021 Existing Condition
Saturday Midday Peak Hour

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕					↕		↕
Traffic Vol, veh/h	47	99	20	36	142	32	0	0	0	84	0	21
Future Vol, veh/h	47	99	20	36	142	32	0	0	0	84	0	21
Conflicting Peds, #/hr	19	0	11	11	0	19	0	0	0	23	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	15	0	1	0	0	0	0	0	0	0
Mvmt Flow	49	104	21	38	149	34	0	0	0	88	0	22

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	202	0	0	136	0	0	497	-	187
Stage 1	-	-	-	-	-	-	261	-	-
Stage 2	-	-	-	-	-	-	236	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	-	3.3
Pot Cap-1 Maneuver	1382	-	-	1461	-	-	536	0	860
Stage 1	-	-	-	-	-	-	787	0	-
Stage 2	-	-	-	-	-	-	808	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1357	-	-	1461	-	-	482	0	843
Mov Cap-2 Maneuver	-	-	-	-	-	-	482	0	-
Stage 1	-	-	-	-	-	-	743	0	-
Stage 2	-	-	-	-	-	-	770	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	1.3	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1357	-	-	1461	-	-	482	843
HCM Lane V/C Ratio	0.036	-	-	0.026	-	-	0.183	0.026
HCM Control Delay (s)	7.8	0	-	7.5	0	-	14.1	9.4
HCM Lane LOS	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	-	0.7	0.1

HCM 6th TWSC
3: Broad Street & Prospect Street

2021 Existing Condition
Saturday Midday Peak Hour

Intersection												
Int Delay, s/veh	9.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	
Traffic Vol, veh/h	51	0	127	15	39	69	141	381	0	0	346	75
Future Vol, veh/h	51	0	127	15	39	69	141	381	0	0	346	75
Conflicting Peds, #/hr	61	0	10	10	0	61	30	0	0	0	0	30
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	1	0	3	0	1	1	0	0	2	3
Mvmt Flow	53	0	132	16	41	72	147	397	0	0	360	78

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1238	1120	439	1166	1159	458	468	0	-	-	-	0
Stage 1	429	429	-	691	691	-	-	-	-	-	-	-
Stage 2	809	691	-	475	468	-	-	-	-	-	-	-
Critical Hdwy	6.6	6	5.7	6.6	6	5.7	4.11	-	-	-	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.309	3.5	4.027	3.3	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	183	243	660	203	231	647	1099	-	0	0	-	-
Stage 1	608	587	-	438	444	-	-	-	0	0	-	-
Stage 2	377	449	-	574	560	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	111	203	635	142	193	609	1068	-	-	-	-	-
Mov Cap-2 Maneuver	111	203	-	142	193	-	-	-	-	-	-	-
Stage 1	510	570	-	378	383	-	-	-	-	-	-	-
Stage 2	241	387	-	450	544	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	43.2		26.6		2.4		0	
HCM LOS	E		D					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	1068	-	270	292	-
HCM Lane V/C Ratio	0.138	-	0.687	0.439	-
HCM Control Delay (s)	8.9	-	43.2	26.6	-
HCM Lane LOS	A	-	E	D	-
HCM 95th %tile Q(veh)	0.5	-	4.6	2.1	-





HCM 6th TWSC
4: Clark Street & Ferris Place

2021 Existing Condition
Saturday Midday Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	179	162	0	41	21
Future Vol, veh/h	0	179	162	0	41	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	1	5	0	5	5
Mvmt Flow	0	185	167	0	42	22
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	352	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	185	-
Critical Hdwy	-	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	0	-	-	0	640	869
Stage 1	0	-	-	0	855	-
Stage 2	0	-	-	0	839	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	640	869
Mov Cap-2 Maneuver	-	-	-	-	640	-
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	839	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		10.6		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	703			
HCM Lane V/C Ratio	-	-	0.091			
HCM Control Delay (s)	-	-	10.6			
HCM Lane LOS	-	-	B			
HCM 95th %tile Q(veh)	-	-	0.3			

HCM 6th TWSC
5: North Avenue & Clark Street

2021 Existing Condition
Saturday Midday Peak Hour

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	151	34	13	527	483	126
Future Vol, veh/h	151	34	13	527	483	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	1	2
Mvmt Flow	156	35	13	543	498	130
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1132	563	628	0	-	0
Stage 1	563	-	-	-	-	-
Stage 2	569	-	-	-	-	-
Critical Hdwy	4.4	4.3	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	425	713	964	-	-	-
Stage 1	574	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	417	713	964	-	-	-
Mov Cap-2 Maneuver	417	-	-	-	-	-
Stage 1	563	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17.2	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	964	-	417	713	-	-
HCM Lane V/C Ratio	0.014	-	0.373	0.049	-	-
HCM Control Delay (s)	8.8	0	18.7	10.3	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	1.7	0.2	-	-

HCM 6th TWSC
1: Ferris Place & Prospect Street

2024 No-Build Condition
Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕					↕		↕
Traffic Vol, veh/h	35	125	48	87	101	33	0	0	0	43	0	14
Future Vol, veh/h	35	125	48	87	101	33	0	0	0	43	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	0	1	0	3	5	0	0	0	0	3	0	0
Mvmt Flow	45	160	62	112	129	42	0	0	0	55	0	18

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	171	0	0	222	0	0	655	-	150
Stage 1	-	-	-	-	-	-	374	-	-
Stage 2	-	-	-	-	-	-	281	-	-
Critical Hdwy	4.1	-	-	4.13	-	-	6.43	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	-	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.527	-	3.3
Pot Cap-1 Maneuver	1418	-	-	1341	-	-	429	0	902
Stage 1	-	-	-	-	-	-	693	0	-
Stage 2	-	-	-	-	-	-	764	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1418	-	-	1341	-	-	375	0	902
Mov Cap-2 Maneuver	-	-	-	-	-	-	375	0	-
Stage 1	-	-	-	-	-	-	668	0	-
Stage 2	-	-	-	-	-	-	693	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	3.1	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1418	-	-	1341	-	-	375	902
HCM Lane V/C Ratio	0.032	-	-	0.083	-	-	0.147	0.02
HCM Control Delay (s)	7.6	0	-	7.9	0	-	16.2	9.1
HCM Lane LOS	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	0.3	-	-	0.5	0.1

HCM 6th TWSC
3: Broad Street & Prospect Street

2024 No-Build Condition
Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↗	
Traffic Vol, veh/h	27	0	86	8	37	20	126	583	0	0	382	47
Future Vol, veh/h	27	0	86	8	37	20	126	583	0	0	382	47
Conflicting Peds, #/hr	8	0	1	1	0	8	3	0	0	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	0	1	0	8	0	2	3	0	0	7	2
Mvmt Flow	29	0	93	9	40	22	137	634	0	0	415	51
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1391	1352	445	1396	1377	642	469	0	-	-	-	0
Stage 1	444	444	-	908	908	-	-	-	-	-	-	-
Stage 2	947	908	-	488	469	-	-	-	-	-	-	-
Critical Hdwy	6.6	6	5.7	6.6	6.1	5.7	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.309	3.5	4.072	3.3	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	146	183	655	145	169	522	1093	-	0	0	-	-
Stage 1	589	579	-	332	346	-	-	-	0	0	-	-
Stage 2	311	357	-	565	551	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	99	159	653	112	147	518	1090	-	-	-	-	-
Mov Cap-2 Maneuver	99	159	-	112	147	-	-	-	-	-	-	-
Stage 1	514	577	-	290	302	-	-	-	-	-	-	-
Stage 2	224	312	-	484	549	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	27.7		37.4		1.6		0					
HCM LOS	D		E									
Minor Lane/Major Mvmt	NBL		NBT EBLn1/WBLn1		SBT		SBR					
Capacity (veh/h)	1090		- 279 180		-		-					
HCM Lane V/C Ratio	0.126		- 0.44 0.393		-		-					
HCM Control Delay (s)	8.8		- 27.7 37.4		-		-					
HCM Lane LOS	A		- D E		-		-					
HCM 95th %tile Q(veh)	0.4		- 2.1 1.7		-		-					





HCM 6th TWSC
4: Clark Street & Ferris Place

2024 No-Build Condition
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	169	181	0	42	44
Future Vol, veh/h	0	169	181	0	42	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	0	1	3	0	6	0
Mvmt Flow	0	238	255	0	59	62
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	493	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	238	-
Critical Hdwy	-	-	-	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	-	-	3.554	3.3
Pot Cap-1 Maneuver	0	-	-	0	528	789
Stage 1	0	-	-	0	778	-
Stage 2	0	-	-	0	792	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	528	789
Mov Cap-2 Maneuver	-	-	-	-	528	-
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	792	-
Approach	EB	WB	SB			
HCM Control Delay, s	0	0	12			
HCM LOS			B			
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	636			
HCM Lane V/C Ratio	-	-	0.19			
HCM Control Delay (s)	-	-	12			
HCM Lane LOS	-	-	B			
HCM 95th %tile Q(veh)	-	-	0.7			

HCM 6th TWSC
5: North Avenue & Clark Street

2024 No-Build Condition
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	191	11	7	696	545	157
Future Vol, veh/h	191	11	7	696	545	157
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	4	0	0	4	4	3
Mvmt Flow	199	11	7	725	568	164
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1392	653	735	0	-	0
Stage 1	653	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Critical Hdwy	4.4	4.3	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	341	665	879	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	469	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	335	663	876	-	-	-
Mov Cap-2 Maneuver	335	-	-	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	29.2	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	876	-	335	663	-	-
HCM Lane V/C Ratio	0.008	-	0.594	0.017	-	-
HCM Control Delay (s)	9.1	0	30.3	10.5	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	0	-	3.6	0.1	-	-

HCM 6th TWSC
1: Ferris Place & Prospect Street

2024 No-Build Condition
Weekday Evening Peak Hour

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔					↔		↔
Traffic Vol, veh/h	61	86	48	30	123	33	0	0	0	94	0	27
Future Vol, veh/h	61	86	48	30	123	33	0	0	0	94	0	27
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	4	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	69	97	54	34	138	37	0	0	0	106	0	30

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	175	0	0	152	0	0	491	-	158
Stage 1	-	-	-	-	-	-	225	-	-
Stage 2	-	-	-	-	-	-	266	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	-	3.3
Pot Cap-1 Maneuver	1414	-	-	1441	-	-	540	0	893
Stage 1	-	-	-	-	-	-	817	0	-
Stage 2	-	-	-	-	-	-	783	0	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1414	-	-	1441	-	-	497	0	892
Mov Cap-2 Maneuver	-	-	-	-	-	-	497	0	-
Stage 1	-	-	-	-	-	-	773	0	-
Stage 2	-	-	-	-	-	-	763	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	1.2	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1414	-	-	1441	-	-	497	892
HCM Lane V/C Ratio	0.048	-	-	0.023	-	-	0.213	0.034
HCM Control Delay (s)	7.7	0	-	7.6	0	-	14.2	9.2
HCM Lane LOS	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	-	0.8	0.1

HCM 6th TWSC
3: Broad Street & Prospect Street

2024 No-Build Condition
Weekday Evening Peak Hour

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	
Traffic Vol, veh/h	26	0	121	16	40	54	125	467	0	0	439	50
Future Vol, veh/h	26	0	121	16	40	54	125	467	0	0	439	50
Conflicting Peds, #/hr	29	0	7	7	0	29	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	4	0	0	0	3	2	1	3	0	0	2	0
Mvmt Flow	26	0	122	16	40	55	126	472	0	0	443	51
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1280	1203	486	1261	1228	501	504	0	-	-	-	0
Stage 1	479	479	-	724	724	-	-	-	-	-	-	-
Stage 2	801	724	-	537	504	-	-	-	-	-	-	-
Critical Hdwy	6.6	6	5.7	6.6	6	5.7	4.11	-	-	-	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.5	4.027	3.318	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	171	220	626	177	212	613	1066	-	0	0	-	-
Stage 1	564	558	-	420	429	-	-	-	0	0	-	-
Stage 2	375	433	-	532	539	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	114	192	616	128	185	596	1056	-	-	-	-	-
Mov Cap-2 Maneuver	114	192	-	128	185	-	-	-	-	-	-	-
Stage 1	492	552	-	370	378	-	-	-	-	-	-	-
Stage 2	261	381	-	424	534	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	23		29.6		1.9		0					
HCM LOS	C		D									
Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1	SBT	SBR							
Capacity (veh/h)	1056	-	346	255	-							
HCM Lane V/C Ratio	0.12	-	0.429	0.436	-							
HCM Control Delay (s)	8.9	-	23	29.6	-							
HCM Lane LOS	A	-	C	D	-							
HCM 95th %tile Q(veh)	0.4	-	2.1	2.1	-							





HCM 6th TWSC
4: Clark Street & Ferris Place

2024 No-Build Condition
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	194	203	0	53	39
Future Vol, veh/h	0	194	203	0	53	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	231	242	0	63	46
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	473	242
Stage 1	-	-	-	-	242	-
Stage 2	-	-	-	-	231	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	0	-	-	0	553	802
Stage 1	0	-	-	0	803	-
Stage 2	0	-	-	0	812	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	553	802
Mov Cap-2 Maneuver	-	-	-	-	553	-
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	812	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		11.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	637			
HCM Lane V/C Ratio	-	-	0.172			
HCM Control Delay (s)	-	-	11.8			
HCM Lane LOS	-	-	B			
HCM 95th %tile Q(veh)	-	-	0.6			

HCM 6th TWSC
5: North Avenue & Clark Street

2024 No-Build Condition
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	228	36	5	549	671	150
Future Vol, veh/h	228	36	5	549	671	150
Conflicting Peds, #/hr	1	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	1	2	3
Mvmt Flow	238	38	5	572	699	156

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1363	780	858	0	-
Stage 1	780	-	-	-	-
Stage 2	583	-	-	-	-
Critical Hdwy	4.4	4.3	4.1	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.3	2.2	-	-
Pot Cap-1 Maneuver	350	601	791	-	-
Stage 1	454	-	-	-	-
Stage 2	560	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	345	599	789	-	-
Mov Cap-2 Maneuver	345	-	-	-	-
Stage 1	449	-	-	-	-
Stage 2	558	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.3	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	789	-	345	599	-	-
HCM Lane V/C Ratio	0.007	-	0.688	0.063	-	-
HCM Control Delay (s)	9.6	0	35.6	11.4	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0	-	4.9	0.2	-	-

HCM 6th TWSC
1: Ferris Place & Prospect Street

2024 No-Build Condition
Saturday Midday Peak Hour

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔					↗		↘
Traffic Vol, veh/h	48	102	21	37	146	33	0	0	0	87	0	22
Future Vol, veh/h	48	102	21	37	146	33	0	0	0	87	0	22
Conflicting Peds, #/hr	20	0	11	11	0	20	0	0	0	24	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	15	0	1	0	0	0	0	0	0	0
Mvmt Flow	51	107	22	39	154	35	0	0	0	92	0	23

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	209	0	0	140	0	0	514	-	194
Stage 1	-	-	-	-	-	-	270	-	-
Stage 2	-	-	-	-	-	-	244	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	-	3.3
Pot Cap-1 Maneuver	1374	-	-	1456	-	-	524	0	853
Stage 1	-	-	-	-	-	-	780	0	-
Stage 2	-	-	-	-	-	-	801	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1348	-	-	1456	-	-	469	0	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	469	0	-
Stage 1	-	-	-	-	-	-	734	0	-
Stage 2	-	-	-	-	-	-	763	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	1.3	13.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1348	-	-	1456	-	-	469	835
HCM Lane V/C Ratio	0.037	-	-	0.027	-	-	0.195	0.028
HCM Control Delay (s)	7.8	0	-	7.5	0	-	14.5	9.4
HCM Lane LOS	A	A	-	A	A	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	-	0.7	0.1

HCM 6th TWSC
3: Broad Street & Prospect Street

2024 No-Build Condition
Saturday Midday Peak Hour

Intersection												
Int Delay, s/veh	11.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖			↖	
Traffic Vol, veh/h	53	0	131	15	40	71	145	393	0	0	356	77
Future Vol, veh/h	53	0	131	15	40	71	145	393	0	0	356	77
Conflicting Peds, #/hr	63	0	10	10	0	63	31	0	0	0	0	31
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	1	0	3	0	1	1	0	0	2	3
Mvmt Flow	55	0	136	16	42	74	151	409	0	0	371	80
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1274	1153	452	1200	1193	472	482	0	-	-	-	0
Stage 1	442	442	-	711	711	-	-	-	-	-	-	-
Stage 2	832	711	-	489	482	-	-	-	-	-	-	-
Critical Hdwy	6.6	6	5.7	6.6	6	5.7	4.11	-	-	-	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.309	3.5	4.027	3.3	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	174	234	650	193	222	636	1086	-	0	0	-	-
Stage 1	598	580	-	427	435	-	-	-	0	0	-	-
Stage 2	366	439	-	564	552	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	103	194	625	133	184	598	1054	-	-	-	-	-
Mov Cap-2 Maneuver	103	194	-	133	184	-	-	-	-	-	-	-
Stage 1	497	563	-	366	373	-	-	-	-	-	-	-
Stage 2	229	376	-	437	535	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	52.6		28.6		2.4		0					
HCM LOS	F		D									
Minor Lane/Major Mvmt	NBL		NBT EBLn1WBLn1		SBT		SBR					
Capacity (veh/h)	1054		- 254 281		-		-					
HCM Lane V/C Ratio	0.143		- 0.755 0.467		-		-					
HCM Control Delay (s)	9		- 52.6 28.6		-		-					
HCM Lane LOS	A		- F D		-		-					
HCM 95th %tile Q(veh)	0.5		- 5.4 2.3		-		-					





HCM 6th TWSC
4: Clark Street & Ferris Place

2024 No-Build Condition
Saturday Midday Peak Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	184	167	0	42	22
Future Vol, veh/h	0	184	167	0	42	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	1	5	0	5	5
Mvmt Flow	0	190	172	0	43	23
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	362	172
Stage 1	-	-	-	-	172	-
Stage 2	-	-	-	-	190	-
Critical Hdwy	-	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	0	-	-	0	631	864
Stage 1	0	-	-	0	851	-
Stage 2	0	-	-	0	835	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	631	864
Mov Cap-2 Maneuver	-	-	-	-	631	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	835	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		10.7		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	695			
HCM Lane V/C Ratio	-	-	0.095			
HCM Control Delay (s)	-	-	10.7			
HCM Lane LOS	-	-	B			
HCM 95th %tile Q(veh)	-	-	0.3			

HCM 6th TWSC
5: North Avenue & Clark Street

2024 No-Build Condition
Saturday Midday Peak Hour

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	156	35	13	543	498	130
Future Vol, veh/h	156	35	13	543	498	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	1	2
Mvmt Flow	161	36	13	560	513	134
Major/Minor						
	Minor2	Major1		Major2		
Conflicting Flow All	1166	580	647	0	-	0
Stage 1	580	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Critical Hdwy	4.4	4.3	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	413	704	948	-	-	-
Stage 1	564	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	405	704	948	-	-	-
Mov Cap-2 Maneuver	405	-	-	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Approach						
	EB	NB		SB		
HCM Control Delay, s	17.9	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt						
	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	948	-	405	704	-	-
HCM Lane V/C Ratio	0.014	-	0.397	0.051	-	-
HCM Control Delay (s)	8.9	0	19.6	10.4	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	1.9	0.2	-	-

HCM 6th TWSC
1: Ferris Place & Prospect Street

2024 Build Condition
Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕					↕		↕
Traffic Vol, veh/h	35	125	50	91	101	33	0	0	0	43	0	14
Future Vol, veh/h	35	125	50	91	101	33	0	0	0	43	0	14
Conflicting Peds, #/hr	0	0	18	18	0	0	0	0	0	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	0	1	0	3	5	0	0	0	0	3	0	0
Mvmt Flow	45	160	64	117	129	42	0	0	0	55	0	18



Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	171	0	0	242	0	0	675	-	150
Stage 1	-	-	-	-	-	-	384	-	-
Stage 2	-	-	-	-	-	-	291	-	-
Critical Hdwy	4.1	-	-	4.13	-	-	6.43	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	-	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.527	-	3.3
Pot Cap-1 Maneuver	1418	-	-	1319	-	-	418	0	902
Stage 1	-	-	-	-	-	-	686	0	-
Stage 2	-	-	-	-	-	-	756	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1418	-	-	1319	-	-	363	0	902
Mov Cap-2 Maneuver	-	-	-	-	-	-	363	0	-
Stage 1	-	-	-	-	-	-	661	0	-
Stage 2	-	-	-	-	-	-	681	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	3.2	14.8
HCM LOS	B		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1418	-	-	1319	-	-	363	902
HCM Lane V/C Ratio	0.032	-	-	0.088	-	-	0.152	0.02
HCM Control Delay (s)	7.6	0	-	8	0	-	16.7	9.1
HCM Lane LOS	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	0.3	-	-	0.5	0.1

HCM 6th TWSC
2: Ferris Place & Site Driveway

2024 Build Condition
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	0	0	135	6
Future Vol, veh/h	0	17	0	0	135	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	0	23	0	0	180	8
Major/Minor	Minor2			Major2		
Conflicting Flow All	-	184		-	0	
Stage 1	-	-		-	-	
Stage 2	-	-		-	-	
Critical Hdwy	-	6.2		-	-	
Critical Hdwy Stg 1	-	-		-	-	
Critical Hdwy Stg 2	-	-		-	-	
Follow-up Hdwy	-	3.3		-	-	
Pot Cap-1 Maneuver	0	864		-	-	
Stage 1	0	-		-	-	
Stage 2	0	-		-	-	
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	864		-	-	
Mov Cap-2 Maneuver	-	-		-	-	
Stage 1	-	-		-	-	
Stage 2	-	-		-	-	
Approach	EB			SB		
HCM Control Delay, s	9.3			0		
HCM LOS	A					
Minor Lane/Major Mvmt	EBLn1	SBT	SBR			
Capacity (veh/h)	864	-	-			
HCM Lane V/C Ratio	0.026	-	-			
HCM Control Delay (s)	9.3	-	-			
HCM Lane LOS	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-			

HCM 6th TWSC
3: Broad Street & Prospect Street

2024 Build Condition
Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↖	
Traffic Vol, veh/h	27	0	86	8	37	20	128	583	0	0	382	49
Future Vol, veh/h	27	0	86	8	37	20	128	583	0	0	382	49
Conflicting Peds, #/hr	13	0	3	3	0	13	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	0	1	0	8	0	2	3	0	0	7	2
Mvmt Flow	29	0	93	9	40	22	139	634	0	0	415	53
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1408	1364	455	1403	1390	647	478	0	-	-	-	0
Stage 1	452	452	-	912	912	-	-	-	-	-	-	-
Stage 2	956	912	-	491	478	-	-	-	-	-	-	-
Critical Hdwy	6.6	6	5.7	6.6	6.1	5.7	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.309	3.5	4.072	3.3	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	142	180	648	144	166	519	1084	-	0	0	-	-
Stage 1	583	574	-	331	345	-	-	-	0	0	-	-
Stage 2	307	355	-	563	546	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	94	155	640	110	143	513	1074	-	-	-	-	-
Mov Cap-2 Maneuver	94	155	-	110	143	-	-	-	-	-	-	-
Stage 1	503	568	-	288	300	-	-	-	-	-	-	-
Stage 2	219	309	-	479	541	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	29.3			38.8			1.6			0		
HCM LOS	D			E								
Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1	SBT	SBR							
Capacity (veh/h)	1074	-	268	175	-	-						
HCM Lane V/C Ratio	0.13	-	0.458	0.404	-	-						
HCM Control Delay (s)	8.8	-	29.3	38.8	-	-						
HCM Lane LOS	A	-	D	E	-	-						
HCM 95th %tile Q(veh)	0.4	-	2.3	1.8	-	-						





HCM 6th TWSC
4: Clark Street & Ferris Place

2024 Build Condition
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	169	181	0	51	52
Future Vol, veh/h	0	169	181	0	51	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	0	1	3	0	6	0
Mvmt Flow	0	238	255	0	72	73
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	493	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	238	-
Critical Hdwy	-	-	-	-	6.46	6.2
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	-	-	3.554	3.3
Pot Cap-1 Maneuver	0	-	-	0	528	789
Stage 1	0	-	-	0	778	-
Stage 2	0	-	-	0	792	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	528	789
Mov Cap-2 Maneuver	-	-	-	-	528	-
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	792	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		12.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	634			
HCM Lane V/C Ratio	-	-	0.229			
HCM Control Delay (s)	-	-	12.4			
HCM Lane LOS	-	-	B			
HCM 95th %tile Q(veh)	-	-	0.9			





HCM 6th TWSC
5: North Avenue & Clark Street

2024 Build Condition
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	200	11	7	696	545	157
Future Vol, veh/h	200	11	7	696	545	157
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	4	0	0	4	4	3
Mvmt Flow	208	11	7	725	568	164
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1392	653	735	0	-	0
Stage 1	653	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Critical Hdwy	4.4	4.3	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	341	665	879	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	469	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	335	663	876	-	-	-
Mov Cap-2 Maneuver	335	-	-	-	-	-
Stage 1	506	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	30.8	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	876	-	335	663	-	-
HCM Lane V/C Ratio	0.008	-	0.622	0.017	-	-
HCM Control Delay (s)	9.1	0	31.9	10.5	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	0	-	3.9	0.1	-	-



HCM 6th TWSC
1: Ferris Place & Prospect Street

2024 Build Condiiton
Weekday Evening Peak Hour

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	86	52	42	123	33	0	0	0	94	0	27
Future Vol, veh/h	61	86	52	42	123	33	0	0	0	94	0	27
Conflicting Peds, #/hr	0	0	13	13	0	0	0	0	0	11	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	1	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	69	97	58	47	138	37	0	0	0	106	0	30
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	175	0	0	168	0	0				526	-	158
Stage 1	-	-	-	-	-	-				251	-	-
Stage 2	-	-	-	-	-	-				275	-	-
Critical Hdwy	4.1	-	-	4.1	-	-				6.4	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-				5.4	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.4	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-				3.5	-	3.3
Pot Cap-1 Maneuver	1414	-	-	1422	-	-				516	0	893
Stage 1	-	-	-	-	-	-				795	0	-
Stage 2	-	-	-	-	-	-				776	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1414	-	-	1422	-	-				470	0	892
Mov Cap-2 Maneuver	-	-	-	-	-	-				470	0	-
Stage 1	-	-	-	-	-	-				752	0	-
Stage 2	-	-	-	-	-	-				747	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	2.4			1.6			13.6					
HCM LOS	B											
Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2				
Capacity (veh/h)	1414	-	-	1422	-	-	470	892				
HCM Lane V/C Ratio	0.048	-	-	0.033	-	-	0.225	0.034				
HCM Control Delay (s)	7.7	0	-	7.6	0	-	14.9	9.2				
HCM Lane LOS	A	A	-	A	A	-	B	A				
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	-	0.9	0.1				

HCM 6th TWSC
2: Ferris Place & Site Driveway

2024 Build Condition
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	0	0	78	16
Future Vol, veh/h	0	10	0	0	78	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	12	0	0	92	19

Major/Minor	Minor2		Major2	
Conflicting Flow All	-	102	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.2	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.3	-	-
Pot Cap-1 Maneuver	0	959	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	-	959	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	8.8	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	959	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	8.8	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

HCM 6th TWSC
3: Broad Street & Prospect Street

2024 Build Condiiton
Weekday Evening Peak Hour

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖			↗	
Traffic Vol, veh/h	26	0	121	16	41	54	131	467	0	0	439	55
Future Vol, veh/h	26	0	121	16	41	54	131	467	0	0	439	55
Conflicting Peds, #/hr	33	0	9	9	0	33	13	0	0	0	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	4	0	0	0	3	2	1	3	0	0	2	0
Mvmt Flow	26	0	122	16	41	55	132	472	0	0	443	56

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1301	1220	493	1277	1248	505	512	0	-	-	-	0
Stage 1	484	484	-	736	736	-	-	-	-	-	-	-
Stage 2	817	736	-	541	512	-	-	-	-	-	-	-
Critical Hdwy	6.6	6	5.7	6.6	6	5.7	4.11	-	-	-	-	-
Critical Hdwy Stg 1	6.14	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.5	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.3	3.5	4.027	3.318	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	166	215	621	173	207	610	1058	-	0	0	-	-
Stage 1	560	555	-	414	424	-	-	-	0	0	-	-
Stage 2	368	428	-	529	535	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	107	186	608	124	179	591	1045	-	-	-	-	-
Mov Cap-2 Maneuver	107	186	-	124	179	-	-	-	-	-	-	-
Stage 1	483	548	-	362	371	-	-	-	-	-	-	-
Stage 2	251	374	-	419	529	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	24.2		31.1		2		0	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	1045	-	333	247	-
HCM Lane V/C Ratio	0.127	-	0.446	0.454	-
HCM Control Delay (s)	8.9	-	24.2	31.1	-
HCM Lane LOS	A	-	C	D	-
HCM 95th %tile Q(veh)	0.4	-	2.2	2.2	-

HCM 6th TWSC
4: Clark Street & Ferris Place

2024 Build Condition
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	194	203	0	59	43
Future Vol, veh/h	0	194	203	0	59	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	231	242	0	70	51





Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	0 473 242
Stage 1	-	-	- 242 -
Stage 2	-	-	- 231 -
Critical Hdwy	-	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	-	-	- 3.5 3.3
Pot Cap-1 Maneuver	0	-	0 553 802
Stage 1	0	-	0 803 -
Stage 2	0	-	0 812 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- 553 802
Mov Cap-2 Maneuver	-	-	- 553 -
Stage 1	-	-	- 803 -
Stage 2	-	-	- 812 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	636
HCM Lane V/C Ratio	-	-	0.191
HCM Control Delay (s)	-	-	12
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7

HCM 6th TWSC
5: North Avenue & Clark Street

2024 Build Condition
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	5.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	234	36	5	549	671	150
Future Vol, veh/h	234	36	5	549	671	150
Conflicting Peds, #/hr	1	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	1	2	3
Mvmt Flow	244	38	5	572	699	156
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1363	780	858	0	-	0
Stage 1	780	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Critical Hdwy	4.4	4.3	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	350	601	791	-	-	-
Stage 1	454	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	345	599	789	-	-	-
Mov Cap-2 Maneuver	345	-	-	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	558	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	33.6	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	789	-	345	599	-	-
HCM Lane V/C Ratio	0.007	-	0.707	0.063	-	-
HCM Control Delay (s)	9.6	0	37	11.4	-	-
HCM Lane LOS	A	A	E	B	-	-
HCM 95th %tile Q(veh)	0	-	5.1	0.2	-	-

HCM 6th TWSC
1: Ferris Place & Prospect Street

2024 Build Condition
Saturday Midday Peak Hour

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔					↵		↵
Traffic Vol, veh/h	48	102	24	48	146	33	0	0	0	87	0	22
Future Vol, veh/h	48	102	24	48	146	33	0	0	0	87	0	22
Conflicting Peds, #/hr	20	0	29	29	0	20	0	0	0	33	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	15	0	1	0	0	0	0	0	0	0
Mvmt Flow	51	107	25	51	154	35	0	0	0	92	0	23

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	209	0	0	161	0	0	549	-	194
Stage 1	-	-	-	-	-	-	294	-	-
Stage 2	-	-	-	-	-	-	255	-	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	-	3.3
Pot Cap-1 Maneuver	1374	-	-	1430	-	-	500	0	853
Stage 1	-	-	-	-	-	-	761	0	-
Stage 2	-	-	-	-	-	-	792	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1348	-	-	1430	-	-	443	0	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	443	0	-
Stage 1	-	-	-	-	-	-	716	0	-
Stage 2	-	-	-	-	-	-	746	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	1.6	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1348	-	-	1430	-	-	443	835
HCM Lane V/C Ratio	0.037	-	-	0.035	-	-	0.207	0.028
HCM Control Delay (s)	7.8	0	-	7.6	0	-	15.2	9.4
HCM Lane LOS	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	-	0.8	0.1

HCM 6th TWSC
2: Ferris Place & Site Driveway

2024 Build Condition
Saturday Midday Peak Hour

Intersection

Int Delay, s/veh 1.2

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations

Traffic Vol, veh/h 0 12 0 0 58 14

Future Vol, veh/h 0 12 0 0 58 14

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length - 0 - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 96 96 96 96 96 96

Heavy Vehicles, % 0 0 0 0 5 0

Mvmt Flow 0 13 0 0 60 15

Major/Minor Minor2 Major2

Conflicting Flow All - 68 - 0

Stage 1 - - - -

Stage 2 - - - -

Critical Hdwy - 6.2 - -

Critical Hdwy Stg 1 - - - -

Critical Hdwy Stg 2 - - - -

Follow-up Hdwy - 3.3 - -

Pot Cap-1 Maneuver 0 1001 - -

Stage 1 0 - - -

Stage 2 0 - - -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver - 1001 - -

Mov Cap-2 Maneuver - - - -

Stage 1 - - - -

Stage 2 - - - -

Approach EB SB

HCM Control Delay, s 8.6 0

HCM LOS A

Minor Lane/Major Mvmt EBLn1 SBT SBR

Capacity (veh/h) 1001 - -

HCM Lane V/C Ratio 0.012 - -

HCM Control Delay (s) 8.6 - -

HCM Lane LOS A - -

HCM 95th %tile Q(veh) 0 - -

HCM 6th TWSC
3: Broad Street & Prospect Street

2024 Build Condition
Saturday Midday Peak Hour

Intersection													
Int Delay, s/veh	12.9												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕		↗	↑			↖		
Traffic Vol, veh/h	53	0	131	15	41	71	151	393	0	0	356	81	
Future Vol, veh/h	53	0	131	15	41	71	151	393	0	0	356	81	
Conflicting Peds, #/hr	68	0	12	12	0	68	38	0	0	0	0	38	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96	
Heavy Vehicles, %	0	0	1	0	3	0	1	1	0	0	2	3	
Mvmt Flow	55	0	136	16	43	74	157	409	0	0	371	84	
Major/Minor	Minor2		Minor1		Major1			Major2					
Conflicting Flow All	1301	1174	463	1216	1216	477	493	0	-	-	-	0	
Stage 1	451	451	-	723	723	-	-	-	-	-	-	-	
Stage 2	850	723	-	493	493	-	-	-	-	-	-	-	
Critical Hdwy	6.6	6	5.7	6.6	6	5.7	4.11	-	-	-	-	-	
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.53	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.53	-	-	-	-	-	-	-	
Follow-up Hdwy	3.5	4	3.309	3.5	4.027	3.3	2.209	-	-	-	-	-	
Pot Cap-1 Maneuver	167	228	642	189	216	633	1076	-	0	0	-	-	
Stage 1	592	574	-	421	429	-	-	-	0	0	-	-	
Stage 2	358	434	-	562	545	-	-	-	0	0	-	-	
Platoon blocked, %								-			-	-	
Mov Cap-1 Maneuver	95	187	612	128	177	592	1037	-	-	-	-	-	
Mov Cap-2 Maneuver	95	187	-	128	177	-	-	-	-	-	-	-	
Stage 1	484	553	-	357	364	-	-	-	-	-	-	-	
Stage 2	219	368	-	432	525	-	-	-	-	-	-	-	
Approach	EB		WB		NB			SB					
HCM Control Delay, s	62.3		30.3		2.5			0					
HCM LOS	F		D										
Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1	SBT	SBR								
Capacity (veh/h)	1037	-	238	271	-	-							
HCM Lane V/C Ratio	0.152	-	0.805	0.488	-	-							
HCM Control Delay (s)	9.1	-	62.3	30.3	-	-							
HCM Lane LOS	A	-	F	D	-	-							
HCM 95th %tile Q(veh)	0.5	-	6.1	2.5	-	-							





HCM 6th TWSC
4: Clark Street & Ferris Place

2024 Build Condition
Saturday Midday Peak Hour

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Traffic Vol, veh/h	0	184	167	0	49	27
Future Vol, veh/h	0	184	167	0	49	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	1	5	0	5	5
Mvmt Flow	0	190	172	0	51	28
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	362	172
Stage 1	-	-	-	-	172	-
Stage 2	-	-	-	-	190	-
Critical Hdwy	-	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	0	-	-	0	631	864
Stage 1	0	-	-	0	851	-
Stage 2	0	-	-	0	835	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	631	864
Mov Cap-2 Maneuver	-	-	-	-	631	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	835	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		10.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	698			
HCM Lane V/C Ratio	-	-	0.112			
HCM Control Delay (s)	-	-	10.8			
HCM Lane LOS	-	-	B			
HCM 95th %tile Q(veh)	-	-	0.4			

HCM 6th TWSC
5: North Avenue & Clark Street

2024 Build Condition
Saturday Midday Peak Hour

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	163	35	13	543	498	130
Future Vol, veh/h	163	35	13	543	498	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	1	2
Mvmt Flow	168	36	13	560	513	134
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1166	580	647	0	-	0
Stage 1	580	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Critical Hdwy	4.4	4.3	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	413	704	948	-	-	-
Stage 1	564	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	405	704	948	-	-	-
Mov Cap-2 Maneuver	405	-	-	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	18.3	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	948	-	405	704	-	-
HCM Lane V/C Ratio	0.014	-	0.415	0.051	-	-
HCM Control Delay (s)	8.9	0	20	10.4	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	2	0.2	-	-

HCM 6th TWSC
3: Broad Street & Prospect Street

2024 Build Condition (No Left)
Weekday Morning Peak Hour

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↕		↖	↗			↖	
Traffic Vol, veh/h	0	0	113	8	37	20	128	583	0	0	382	49
Future Vol, veh/h	0	0	113	8	37	20	128	583	0	0	382	49
Conflicting Peds, #/hr	13	0	3	3	0	13	10	0	0	0	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	0	1	0	8	0	2	3	0	0	7	2
Mvmt Flow	0	0	123	9	40	22	139	634	0	0	415	53

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	455	1418	1390	647	478	0	-	-	-	0
Stage 1	-	-	-	912	912	-	-	-	-	-	-	-
Stage 2	-	-	-	506	478	-	-	-	-	-	-	-
Critical Hdwy	-	-	5.7	6.6	6.1	5.7	4.12	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.309	3.5	4.072	3.3	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	648	141	166	519	1084	-	0	0	-	-
Stage 1	0	0	-	331	345	-	-	-	0	0	-	-
Stage 2	0	0	-	552	546	-	-	-	0	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	640	102	143	513	1074	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	102	143	-	-	-	-	-	-	-
Stage 1	-	-	-	288	300	-	-	-	-	-	-	-
Stage 2	-	-	-	445	541	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	39.5	1.6	0
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	1074	-	640	173	-	-
HCM Lane V/C Ratio	0.13	-	0.192	0.408	-	-
HCM Control Delay (s)	8.8	-	12	39.5	-	-
HCM Lane LOS	A	-	B	E	-	-
HCM 95th %tile Q(veh)	0.4	-	0.7	1.8	-	-

HCM 6th TWSC
3: Broad Street & Prospect Street

2024 Build Condition (No Left)
Weekday Evening Peak Hour

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗		↕		↖	↑			↗	
Traffic Vol, veh/h	0	0	147	16	41	54	131	467	0	0	439	55
Future Vol, veh/h	0	0	147	16	41	54	131	467	0	0	439	55
Conflicting Peds, #/hr	33	0	9	9	0	33	13	0	0	0	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	4	0	0	0	3	2	1	3	0	0	2	0
Mvmt Flow	0	0	148	16	41	55	132	472	0	0	443	56






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	493	1290	1248	505	512	0	-	-	-	0
Stage 1	-	-	-	736	736	-	-	-	-	-	-	-
Stage 2	-	-	-	554	512	-	-	-	-	-	-	-
Critical Hdwy	-	-	5.7	6.6	6	5.7	4.11	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	3.5	4.027	3.318	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	621	170	207	610	1058	-	0	0	-	-
Stage 1	0	0	-	414	424	-	-	-	0	0	-	-
Stage 2	0	0	-	520	535	-	-	-	0	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	608	115	179	591	1045	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	115	179	-	-	-	-	-	-	-
Stage 1	-	-	-	362	371	-	-	-	-	-	-	-
Stage 2	-	-	-	390	529	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.8		32.1		2		0	
HCM LOS	B		D					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1/WBLn1	SBT	SBR
Capacity (veh/h)	1045	-	608	242	-
HCM Lane V/C Ratio	0.127	-	0.244	0.463	-
HCM Control Delay (s)	8.9	-	12.8	32.1	-
HCM Lane LOS	A	-	B	D	-
HCM 95th %tile Q(veh)	0.4	-	1	2.3	-

HCM 6th TWSC
3: Broad Street & Prospect Street

2024 Build Condition (No Left)
Saturday Midday Peak Hour

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	184	15	41	71	151	393	0	0	356	81
Future Vol, veh/h	0	0	184	15	41	71	151	393	0	0	356	81
Conflicting Peds, #/hr	68	0	12	12	0	68	38	0	0	0	0	38
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	1	0	3	0	1	1	0	0	2	3
Mvmt Flow	0	0	192	16	43	74	157	409	0	0	371	84

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	463	1244	1216	477	493	0	-	-	-	0
Stage 1	-	-	-	723	723	-	-	-	-	-	-	-
Stage 2	-	-	-	521	493	-	-	-	-	-	-	-
Critical Hdwy	-	-	5.7	6.6	6	5.7	4.11	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.309	3.5	4.027	3.3	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	642	181	216	633	1076	-	0	0	-	-
Stage 1	0	0	-	421	429	-	-	-	0	0	-	-
Stage 2	0	0	-	542	545	-	-	-	0	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	612	109	177	592	1037	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	109	177	-	-	-	-	-	-	-
Stage 1	-	-	-	357	364	-	-	-	-	-	-	-
Stage 2	-	-	-	368	525	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.5		32.4		2.5		0	
HCM LOS	B		D					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1WBLn1	SBT	SBR
Capacity (veh/h)	1037	-	612	260	-
HCM Lane V/C Ratio	0.152	-	0.313	0.509	-
HCM Control Delay (s)	9.1	-	13.5	32.4	-
HCM Lane LOS	A	-	B	D	-
HCM 95th %tile Q(veh)	0.5	-	1.3	2.7	-

SIGNAL WARRANT ANALYSIS

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 04/08/2019 to 04/11/2019

Site names: 3n5h716, RT 509 East Broad Street-0.23, 00000509__

County: UNION

Func't Class: Urban Minor Arterial

Location: BET MOUNTAIN AVE & CENTRAL AVE

Seasonal Factor Grp: rg1_4U

Daily Factor Grp: rg1_4U

Axle Factor Grp: rg1_4U

Growth Factor Grp: rg1_4U

	Sun, Apr 7, 2019			Mon, Apr 8, 2019			Tue, Apr 9, 2019			Wed, Apr 10, 2019			Thu, Apr 11, 2019			Fri, Apr 12, 2019			Sat, Apr 13, 2019		
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S
00:00																					
01:00							54	31	23	56	25	31	65	32	33						
02:00							23	16	7	37	21	16	31	19	12						
03:00							17	11	6	23	16	7	25	10	15						
04:00							31	17	14	31	17	14	43	20	23						
05:00							60	26	34	75	33	42	60	24	36						
06:00							214	113	101	219	104	115	219	109	110						
07:00							903	521	392	916	498	418	887	494	393						
08:00							1,868	1,041	827	1,926	991	935	1,910	1,025	885						
09:00							1,852	1,020	832	1,923	1,017	906	1,926	1,079	847						
10:00							1,624	810	814	1,640	815	825	1,645	839	808						
11:00							1,577	817	760	1,463	785	678	1,643	825	818						
12:00							1,590	829	761	1,554	835	719									
13:00							1,482	809	673	1,562	847	715									
14:00							1,417	742	675	1,544	819	725	1,402	746	658						
15:00							1,620	877	743	1,750	940	810	1,734	945	789						
16:00							1,674	857	817	1,784	861	923	1,796	954	842						
17:00							1,766	848	938	1,910	930	980	1,876	918	960						
18:00							1,856	859	997	1,985	983	1,002	1,913	933	960						
19:00							1,596	762	834	1,780	838	942	1,808	965	843						
20:00							1,189	623	576	1,328	641	697	1,480	736	745						
21:00							909	463	446	905	435	470	1,000	512	488						
22:00							521	281	240	641	280	361	755	405	350						
23:00							180	88	92	313	134	176	323	170	153						
Total							15,793	8,090	7,709	25,552	13,033	12,516	25,654	13,350	12,304				8,454	4,476	3,978
AM Peak Vol							1,458	821	637	1,924	1,051	874	2,001	1,048	984						
AM Peak Fct							.932	.942	.921	.921	.988	.85	.93	.96	.928						
PM Peak Hr							11:00	11:00	11:00	7:15	7:15	8:30	7:15	7:30	7:15						
PM Peak Vol							1,856	904	998	1,985	983	1,006	1,932	981	1,000						
PM Peak Fct							.989	.938	.975	.969	.971	.91	.974	.936	.923						
PM Peak Hr							17:00	14:15	17:15	17:00	17:00	16:30	17:15	14:30	16:45						
Seasonal Fct							1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015	1.015				1.015	1.015	
Daily Fct							.903	.903	.903	.908	.908	.908	.893	.893	.887				.887	.887	
Axle Fct							.492	.492	.492	.492	.492	.492	.492	.492	.492				.492	.492	
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000				2.000	2.000	

STONEFIELD

Intersection of Prospect Street
& Broad Street
Westfield, New Jersey

Exhibit A1: Count Adjustment for Warrant Analysis

Time	April 11, 2019 ATRs			Percentage of Network Peak
	Northbound	Southbound	Total	
12:00 AM	31	23	54	3%
1:00 AM	16	7	23	1%
2:00 AM	11	6	17	1%
3:00 AM	17	14	31	2%
4:00 AM	26	34	60	3%
5:00 AM	113	101	214	12%
6:00 AM	521	382	903	49%
7:00 AM	1041	827	1868	101%
8:00 AM	1020	832	1852	100%
9:00 AM	810	814	1624	88%
10:00 AM	817	760	1577	85%
11:00 AM	829	761	1590	86%
12:00 PM	862	817	1679	85%
1:00 PM	819	725	1544	78%
2:00 PM	940	810	1750	88%
3:00 PM	861	923	1784	90%
4:00 PM	930	980	1910	96%
5:00 PM	983	1002	1985	100%
6:00 PM	838	942	1780	90%
7:00 PM	641	687	1328	67%
8:00 PM	435	470	905	46%
9:00 PM	280	361	641	32%
10:00 PM	134	179	313	16%
11:00 PM	58	62	120	6%

STONEFIELD

Exhibit A2: Count Adjustment for Warrant Analysis

Intersection of Prospect Street
& Broad Street
Westfield, New Jersey

		October TMCs AM Peak								
Time	Percentage	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
12:00 AM	3%	26	83	8	36	19	122	566	371	46
1:00 AM	1%	1	2	0	1	1	4	17	11	1
2:00 AM	1%	0	1	0	0	0	2	7	5	1
3:00 AM	2%	0	1	0	0	0	1	5	3	0
4:00 AM	3%	0	1	0	1	0	2	9	6	1
5:00 AM	12%	1	3	0	1	1	4	18	12	1
6:00 AM	49%	3	10	1	4	2	14	65	43	5
7:00 AM	101%	13	40	4	18	9	59	276	181	22
8:00 AM	100%	0	84	8	36	19	123	571	374	46
9:00 AM	88%	0	83	8	36	19	122	566	371	46
10:00 AM	85%	0	73	7	32	17	107	496	325	40
11:00 AM	86%	22	71	7	31	16	104	482	316	39
		22	71	7	31	16	105	486	319	39
12:00 PM	85%	21	99	14	33	44	102	383	360	41
1:00 PM	78%	19	91	12	30	40	94	352	331	38
2:00 PM	88%	22	103	14	34	46	107	399	376	43
3:00 PM	90%	22	105	14	35	47	109	407	383	44
4:00 PM	96%	24	113	15	38	50	116	436	410	47
5:00 PM	100%	25	117	16	39	52	121	453	426	49
6:00 PM	90%	22	105	14	35	47	109	406	382	44
7:00 PM	67%	17	78	11	26	35	81	303	285	33
8:00 PM	46%	11	53	7	18	24	55	207	194	22
9:00 PM	32%	8	38	5	13	17	39	146	138	16
10:00 PM	16%	4	18	3	6	8	19	71	67	8
11:00 PM	6%	2	7	1	2	3	7	27	26	3
		25	117	16	39	52	121	453	426	49
		EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
		October TMCs PM Peak								

Warrants Volume										
Information										
Analyst Agency/Co SE&D Date Performed 4/13/2022 Project ID East/West Street Prospect Street File Name Warrants-Existing				Intersection Broad Street & Prospect Street Jurisdiction Union County Units U.S. Customary Time Period Analyzed PRI-210151 North/South Street Broad Street Major Street North-South						
Project Description										
Warrant 1										
Condition A - Minimum Vehicular Volume										
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)					
Major Street	Minor Street	100%*	80%*	70%*	100%*	80%*	70%*			
1.....	1.....	500	400	350	150	120	105			
2 or more...	1.....	600	480	420	150	120	105			
2 or more...	2 or more...	600	480	420	200	160	140			
1.....	2 or more...	500	400	350	200	160	140			
Condition B - Interruption of Continuous Traffic										
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)					
Major Street	Minor Street	100%*	80%*	70%*	100%*	80%*	70%*			
1.....	1.....	750	600	525	75	60	53			
2 or more...	1.....	900	720	630	75	60	53			
2 or more...	2 or more...	900	720	630	100	80	70			
1.....	2 or more...	750	600	525	100	80	70			
Warrant 2										
Warrant 3										
Volume Summary										
Major Street Lanes 1		Minor Street Lanes 1		Speed		Population		10000+		
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)
07-08	1114	110	1287	No	No	Yes	Yes	Yes	No	No
08-09	1105	109	1277	No	No	Yes	Yes	Yes	No	No
09-10	968	96	1120	No	No	Yes	Yes	No	No	No
10-11	941	93	1088	No	No	Yes	Yes	No	No	No
11-12	949	93	1098	No	No	Yes	Yes	No	No	No
12-13	886	120	1097	No	Yes	Yes	Yes	No	No	No
13-14	815	110	1007	No	No	Yes	Yes	No	No	No
14-15	925	125	1144	No	Yes	Yes	Yes	Yes	No	No
15-16	943	127	1166	No	Yes	Yes	Yes	Yes	No	No
16-17	1009	137	1249	No	Yes	Yes	Yes	Yes	No	No
17-18	1049	142	1298	No	Yes	Yes	Yes	Yes	No	No
18-19	941	127	1164	No	Yes	Yes	Yes	Yes	No	No
Totals	11645	1389	13993	0	6	12	12	7	0	0

Analyst: Intersection: Broad Street & Prospect Street Agency: SE&D
 Date: 4/13/2022 Units: U.S. Customary
 Project ID: Analysis Year: 2022
 EW Street: Prospect Street NS Street: Broad Street

Jurisdiction: Union County

General Information

Major St. Speed (mph): 25 Population: Not less than 10000
 Nearest Signal (ft): 285 Coordinated Signal System: N
 Crashes per Yr: 3

School Crossing

Students in Highest Hour: 0
 Adequate Gaps in Period: 0
 Minutes in Period: 0

Roadway Network

Two Major Routes: 0
 Weekend Count: 0
 5-yr Growth Factor: 0

	Geometry and Traffic											
	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Lane Usage	LTR			LTR			LT			TR		

Results

Warrant 1: Eight-Hour Vehicular Volume ☒
 1 A. Minimum Vehicular Volumes ☐
 1 B. Interruption of Continuous Traffic ☒
 1 80% Vehicular --and-- Interruption Volumes ☐
 Warrant 2: Four-Hour Vehicular Volume ☒
 2 A. Four-Hour Vehicular Volumes ☒
 Warrant 3: Peak Hour ☐
 3 A. Peak-Hour Conditions ☐
 3 B. Peak-Hour Vehicular Volume Hours Met ☐
 Warrant 4: Pedestrian Volume ☐
 4 A. Pedestrian Volumes ☐
 4 B. Gaps Same Period ☐
 Warrant 5: School Crossing ☐
 5 A. Student Volumes ☐
 5 B. Gaps Same Period ☐
 Warrant 6: Coordinated Signal System ☐
 6 Degree of Platooning ☐
 Warrant 7: Crash Experience ☐
 7 A. Adequate trials of alternatives ☐
 7 B. Reported crashes ☐

7 80% Volumes for Warrants 1A, 1B --or-- 4

[X]

Warrant 8: Roadway Network

[]

9 A. Weekday Volume

[]

9 B. Weekend Volume

[]

Summary											
Hours	Major Volume	Minor Volume	Total Volume	Delay (Veh-hr)	1A 100%	1A 80%	1B 100%	1B 80%	2 100%	3A 100%	3B 100%
07-08	1114	110	1287	0.0	No	No	Yes	Yes	Yes	No	No
08-09	1105	109	1277	0.0	No	No	Yes	Yes	Yes	No	No
09-10	968	96	1120	0.0	No	No	Yes	Yes	No	No	No
10-11	941	93	1088	0.0	No	No	Yes	Yes	No	No	No
11-12	949	93	1096	0.0	No	No	Yes	Yes	No	No	No
12-13	886	120	1097	0.0	No	Yes	Yes	Yes	No	No	No
13-14	815	110	1007	0.0	No	No	Yes	Yes	No	No	No
14-15	925	125	1144	0.0	No	Yes	Yes	Yes	Yes	No	No
15-16	943	127	1166	0.0	No	Yes	Yes	Yes	Yes	No	No
16-17	1009	137	1249	0.0	No	Yes	Yes	Yes	Yes	No	No
17-18	1049	142	1298	0.0	No	Yes	Yes	Yes	Yes	No	No
18-19	941	127	1164	0.0	No	Yes	Yes	Yes	Yes	No	No
Total	11645	1389	13993	0	0	6	12	12	7	0	0

Traffic Volumes (vph)

Eastbound			Westbound			Northbound			Southbound		
L	T	R	L	T	R	L	T	R	L	T	R
26	0	84	8	36	19	123	571	0	0	374	46
26	0	83	8	36	19	122	566	0	0	371	46
23	0	73	7	32	17	107	496	0	0	325	40
22	0	71	7	31	16	104	482	0	0	316	39
22	0	71	7	31	16	105	486	0	0	319	39
21	0	99	14	33	44	102	383	0	0	360	41
19	0	91	12	30	40	94	352	0	0	331	38
22	0	103	14	34	46	107	399	0	0	376	43
22	0	105	14	35	47	109	407	0	0	383	44
24	0	113	15	38	50	116	436	0	0	410	47
25	0	117	16	39	52	121	453	0	0	426	49
22	0	105	14	35	47	109	406	0	0	382	44

Pedestrian Volumes and Gaps (Per Hour)

Volume	Gap	Volume	Gap	Volume	Gap	Volume	Gap
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
3	0	1	0	1	0	8	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

Delay	sec/veh	veh-hrs	sec/veh	veh-hrs	sec/veh	veh-hrs	sec/veh	veh-hrs
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0*
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

GAP ANALYSIS



STONEFIELD
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GAP COUNT SUMMARY AND ANALYSIS

Left-turn from Clark Street to North Avenue

Westfield, Union, NJ

Count Conducted: December 9, 2021

SE&D Job No.: PRI-210151

TIME	AVAILABLE GAPS (SECONDS)											25.4+
	0 - 4.39	4.4 - 7.89	7.9 - 11.39	11.4 - 14.89	14.9 - 18.39	18.4 - 21.89	21.9 - 25.39					
8:00 AM	85	8	4	1	3	0	0	0	0	0	0	
8:05 AM	97	9	9	1	0	0	0	0	0	0	0	
8:10 AM	86	9	1	1	0	1	0	0	0	0	1	
8:15 AM	67	13	5	0	1	0	0	0	0	0	1	
8:20 AM	69	7	8	1	1	0	0	1	1	0	0	
8:25 AM	63	11	7	1	2	1	0	0	0	0	0	
8:30 AM	75	11	4	1	2	0	1	1	0	0	0	
8:35 AM	74	15	5	2	0	0	0	1	1	0	0	
8:40 AM	82	21	4	0	0	1	0	0	0	0	0	
8:45 AM	62	14	7	3	0	0	0	0	0	0	0	
8:50 AM	85	10	9	1	0	0	0	0	0	0	0	
8:55 AM	52	15	6	2	2	0	0	0	0	0	0	
Total Gaps												
8:00 AM-9:00 AM Peak	897	143	69	14	11	3	3	3	3	2	2	
Vehicles/Gap	0	1	2	3	4	5	6	6	6	7	7	
Vehicular Capacity (8:00 AM-9:00 AM Peak)		143	138	42	44	15	18	18	18	14	14	
Total Capacity (Vehicles):											414	

Gap Required For:

- 1 Vehicle: 4.4 seconds
- 2 Vehicles: 7.9 seconds
- 3 Vehicles: 11.4 seconds
- 4 Vehicles: 14.9 seconds
- 5 Vehicles: 18.4 seconds
- 6 Vehicles: 21.9 seconds
- 7 Vehicles: 25.4 seconds

Base Critical Gap: 4.4 seconds

Follow-Up Gap: 3.5 seconds



GAP COUNT SUMMARY AND ANALYSIS

Right-turn from Clark Street to North Avenue
Westfield, Union, NJ

Count Conducted: December 9, 2021

SE&D Job No.: PRI-210151

TIME	AVAILABLE GAPS (SECONDS)										
	0 - 4.29	4.3 - 7.59	7.6 - 10.89	10.9 - 14.19	14.2 - 17.49	17.5 - 20.79	20.8 - 24.09	24.1+			
8:00 AM	85	8	4	1	2	1	0	0			
8:05 AM	97	9	8	2	0	0	0	0			
8:10 AM	86	9	1	1	0	1	0	1			
8:15 AM	67	13	5	0	1	0	0	1			
8:20 AM	69	7	8	1	1	0	1	0			
8:25 AM	63	11	5	3	2	1	0	0			
8:30 AM	75	11	3	2	0	2	1	0			
8:35 AM	74	15	4	3	0	0	1	0			
8:40 AM	82	21	4	0	0	1	0	0			
8:45 AM	62	14	6	4	0	0	0	0			
8:50 AM	85	10	8	2	0	0	0	0			
8:55 AM	52	15	4	4	2	0	0	0			
Total Gaps											
8:00 AM-9:00 AM Peak	897	143	60	23	8	6	3	2			
Vehicles/Gap	0	1	2	3	4	5	6	7			
Vehicular Capacity (8:00 AM-9:00 AM Peak)		143	120	69	32	30	18	14			

Total Capacity (Vehicles): 426

Gap Required For:

- 1 Vehicle: 4.3 seconds
- 2 Vehicles: 7.6 seconds
- 3 Vehicles: 10.9 seconds
- 4 Vehicles: 14.2 seconds
- 5 Vehicles: 17.5 seconds
- 6 Vehicles: 20.8 seconds
- 7 Vehicles: 24.1 seconds

Base Critical Gap: 4.3 seconds

Follow-Up Gap: 3.3 seconds



STONEFIELD
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GAP COUNT SUMMARY AND ANALYSIS

Left-turn from Clark Street to North Avenue
Westfield, Union, NJ

Count Conducted: December 8, 2021

SE&D Job No.: PRI-210151

TIME	AVAILABLE GAPS (SECONDS)											25.4+
	0 - 4.39	4.4 - 7.89	7.9 - 11.39	11.4 - 14.89	14.9 - 18.39	18.4 - 21.89	21.9 - 25.39					
4:45 PM	74	12	3	4	1	0	0	0	0	0	0	
4:50 PM	78	11	5	0	1	1	1	1	1	0	0	
4:55 PM	83	15	3	1	0	0	0	1	1	0	0	
5:00 PM	79	11	6	3	1	0	0	0	0	0	0	
5:05 PM	65	12	5	2	0	0	0	2	2	0	0	
5:10 PM	68	16	4	2	1	1	1	0	0	0	0	
5:15 PM	83	14	5	1	1	0	0	0	0	0	0	
5:20 PM	73	13	2	2	2	0	0	0	0	0	0	
5:25 PM	89	10	6	1	1	1	1	0	0	0	0	
5:30 PM	46	10	9	1	1	1	1	0	0	1	1	
5:35 PM	74	6	7	2	1	1	1	0	0	0	0	
5:40 PM	76	11	7	1	2	0	0	0	0	0	0	
Total Gaps												
4:45 PM-5:45 PM Peak	888	141	62	20	12	5	4	4	1	1	1	
Vehicles/Gap	0	1	2	3	4	5	6	6	7	7	7	
Vehicular Capacity (4:45 PM-5:45 PM Peak)		141	124	60	48	25	24	24	7	7	7	
Total Capacity (Vehicles):											429	

Gap Required For:

- 1 Vehicle: 4.4 seconds
- 2 Vehicles: 7.9 seconds
- 3 Vehicles: 11.4 seconds
- 4 Vehicles: 14.9 seconds
- 5 Vehicles: 18.4 seconds
- 6 Vehicles: 21.9 seconds
- 7 Vehicles: 25.4 seconds

Base Critical Gap: 4.4 seconds

Follow-Up Gap: 3.5 seconds



GAP COUNT SUMMARY AND ANALYSIS

Right-turn from Clark Street to North Avenue
Westfield, Union, NJ

Count Conducted: December 8, 2021

SE&D Job No.: PRI-210151

TIME	AVAILABLE GAPS (SECONDS)											24.1+
	0 - 4.29	4.3 - 7.59	7.6 - 10.89	10.9 - 14.19	14.2 - 17.49	17.5 - 20.79	20.8 - 24.09					
4:45 PM	74	12	3	4	1	0	0	0	0	0	0	
4:50 PM	78	11	4	1	1	1	0	0	0	0	1	
4:55 PM	83	15	2	2	0	0	0	0	0	0	1	
5:00 PM	79	11	5	4	1	0	0	0	0	0	0	
5:05 PM	65	12	4	3	0	0	2	2	0	0	0	
5:10 PM	68	16	4	2	0	1	1	1	0	0	0	
5:15 PM	83	14	4	2	0	1	0	0	0	0	0	
5:20 PM	73	13	1	3	2	0	0	0	0	0	0	
5:25 PM	89	10	5	2	1	1	0	0	0	0	0	
5:30 PM	46	10	8	2	1	1	0	0	0	1	1	
5:35 PM	74	6	6	3	1	0	1	1	0	0	0	
5:40 PM	76	11	6	2	2	0	0	0	0	0	0	
Total Gaps												
4:45 PM-5:45 PM Peak	888	141	52	30	10	5	4	3	3	7	21	
Vehicles/Gap	0	1	2	3	4	5	6	7	8	9	10	
Vehicular Capacity (4:45 PM-5:45 PM Peak)		141	104	90	40	25	24	21	18	15	12	

Total Capacity (Vehicles): 445

Gap Required For:

- 1 Vehicle: 4.3 seconds
- 2 Vehicles: 7.6 seconds
- 3 Vehicles: 10.9 seconds
- 4 Vehicles: 14.2 seconds
- 5 Vehicles: 17.5 seconds
- 6 Vehicles: 20.8 seconds
- 7 Vehicles: 24.1 seconds

Base Critical Gap: 4.3 seconds
Follow-Up Gap: 3.3 seconds



GAP COUNT SUMMARY AND ANALYSIS

Left-turn from Clark Street to North Avenue

Westfield, Union, NJ

Count Conducted: December 18, 2021

SE&D Job No.: PRI-210151

TIME	AVAILABLE GAPS (SECONDS)											25.4+
	0 - 4.39	4.4 - 7.89	7.9 - 11.39	11.4 - 14.89	14.9 - 18.39	18.4 - 21.89	21.9 - 25.39					
11:45 AM	65	15	8	0	2	0	0	0	0	0	0	
11:50 AM	77	15	2	3	0	0	0	0	0	0	1	
11:55 AM	78	7	5	1	3	1	0	0	0	0	0	
12:00 PM	57	19	3	1	1	0	1	1	0	0	0	
12:05 PM	75	8	7	2	0	0	0	0	0	0	1	
12:10 PM	68	8	6	1	3	0	0	0	0	0	0	
12:15 PM	57	16	7	2	2	0	0	0	0	0	0	
12:20 PM	51	9	7	1	1	1	1	1	1	0	0	
12:25 PM	61	10	5	4	1	0	1	1	1	0	0	
12:30 PM	71	8	6	1	0	0	0	2	2	0	0	
12:35 PM	63	11	1	1	3	1	1	0	0	1	1	
12:40 PM	59	10	4	2	0	1	1	0	0	2	2	
Total Gaps												
11:45 AM-12:45 PM Peak	782	136	61	19	16	4	5	5	5	5	5	
Vehicles/Gap	0	1	2	3	4	5	6	7	7	7	7	
Vehicular Capacity (11:45 AM-12:45 PM Peak)		136	122	57	64	20	30	35	35	35	35	

Total Capacity (Vehicles): 464

Gap Required For:

- 1 Vehicle: 4.4 seconds
- 2 Vehicles: 7.9 seconds
- 3 Vehicles: 11.4 seconds
- 4 Vehicles: 14.9 seconds
- 5 Vehicles: 18.4 seconds
- 6 Vehicles: 21.9 seconds
- 7 Vehicles: 25.4 seconds

Base Critical Gap: 4.4 seconds

Follow-Up Gap: 3.5 seconds

GAP COUNT SUMMARY AND ANALYSIS

Right-turn from Clark Street to North Avenue
Westfield, Union, NJ

Count Conducted: December 18, 2021

SE&D Job No.: PRI-210151

TIME	AVAILABLE GAPS (SECONDS)										
	0 - 4.29	4.3 - 7.59	7.6 - 10.89	10.9 - 14.19	14.2 - 17.49	17.5 - 20.79	20.8 - 24.09	24.1 +			
11:45 AM	65	15	7	1	2	0	0	0			
11:50 AM	77	15	2	3	0	0	0	1			
11:55 AM	78	7	5	1	3	1	0	0			
12:00 PM	57	19	3	1	1	0	1	0			
12:05 PM	75	8	7	2	0	0	0	1			
12:10 PM	68	8	6	1	2	1	0	0			
12:15 PM	57	16	7	2	2	0	0	0			
12:20 PM	51	9	7	1	1	1	1	0			
12:25 PM	61	10	5	4	1	0	1	0			
12:30 PM	71	8	4	3	0	0	1	1			
12:35 PM	63	11	1	1	3	0	1	1			
12:40 PM	59	10	3	3	0	1	0	2			
Total Gaps											
11:45 AM-12:45 PM Peak	782	136	57	23	15	4	5	6			
Vehicles/Gap	0	1	2	3	4	5	6	7			
Vehicular Capacity (11:45 AM-12:45 PM Peak)		136	114	69	60	20	30	42			

Total Capacity (Vehicles): 471

Gap Required For:

- 1 Vehicle: 4.3 seconds
- 2 Vehicles: 7.6 seconds
- 3 Vehicles: 10.9 seconds
- 4 Vehicles: 14.2 seconds
- 5 Vehicles: 17.5 seconds
- 6 Vehicles: 20.8 seconds
- 7 Vehicles: 24.1 seconds

Base Critical Gap: 4.3 seconds

Follow-Up Gap: 3.3 seconds

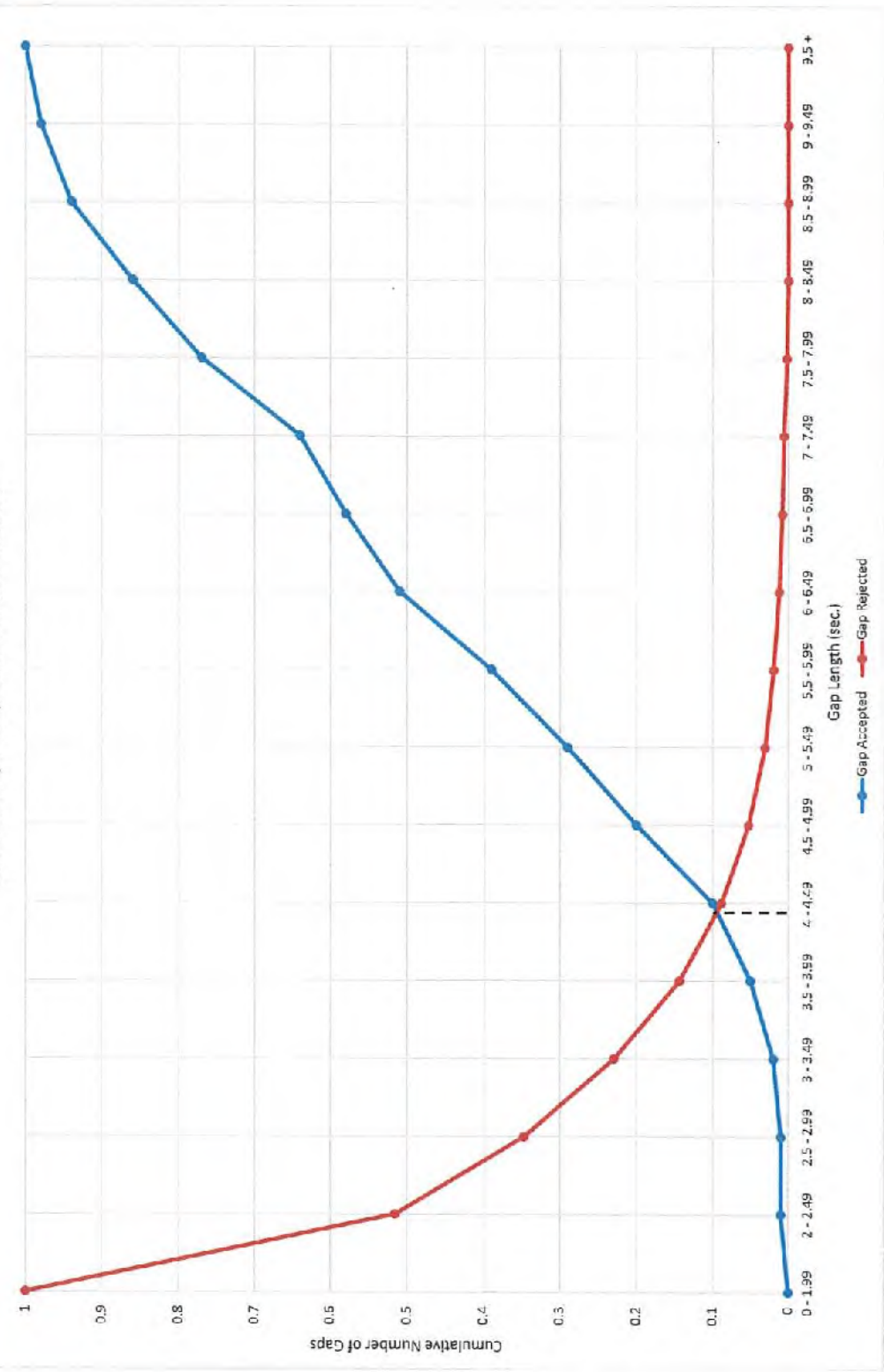
STONEFIELD

Intersection of North Avenue and Clark Street
 Township of Westfield, Union County, New Jersey

Proposed Mixed-Use Development
 Township of Westfield, Union County, New Jersey
 Count Conducted: 12/8/2021
 SE&D Job No. PRI-210151

TIME	GAPS (SECONDS)																
	0 - 1.99	2 - 2.49	2.5 - 2.99	3 - 3.49	3.5 - 3.99	4 - 4.49	4.5 - 4.99	5 - 5.49	5.5 - 5.99	6 - 6.49	6.5 - 6.99	7 - 7.49	7.5 - 7.99	8 - 8.49	8.5 - 8.99	9 - 9.49	9.5 +
Gap Accepted	0	1	0	1	3	5	10	9	10	12	7	6	13	9	8	4	2
Gap Rejected	469	163	114	83	53	35	21	11	7	4	2	4	2	0	0	0	0

Left Turn Gap Acceptance Per Raff Method



GAPS (SECONDS)

TIME	0 - 1.99	2 - 2.49	2.5 - 2.99	3 - 3.49	3.5 - 3.99	4 - 4.49	4.5 - 4.99	5 - 5.49	5.5 - 5.99	6 - 6.49	6.5 - 6.99	7 - 7.49	7.5 - 7.99	8 - 8.49	8.5 - 8.99	9 - 9.49	9.5 +
Gap Accepted	0	0	1	4	4	4	0	4	4	4	6	7	3	3	1	5	2
Gap Rejected	76	38	28	16	11	17	8	6	3	7	2	2	0	0	0	1	0

